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ABSTRACT

This subject guide to articles and illustrations appearing in the National Geographic over a 64 year period groups detailed topics under broader alphabetical headings. It is not an author or title index, and includes people only as featured subjects of articles. An abbreviation key is provided. (FM)

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Handy Key to Your "NATIONAL GEOGRAPHICS" *Subject and Picture Locater* 14th Edition, 1915 - 1979

Enlarged and Revised Edition

Compiled by
Charles S. Underhill

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EXPLANATION

This index has been cumulated every two years in a complete revision since 1955, to enable librarians, teachers and others to locate in a single alphabetical listing all the incomparable educational and pictorial wealth to be found in the *National Geographic Magazine* in any year likely to be requested, providing at the same time a quick means of selecting the most useful articles in order of preference up to the last December of odd-numbered years.

From its first edition of six mimeographed pages it has grown to about 70 pages with at least 12 times its original content, and the period covered has grown from 20 years to 65. Even with all the additional detail on the illustrations the original aim remains of locating material easily and in preferential order: the articles with broader coverage are still first under each heading.

The second edition of 1956 expanded the subject coverage far beyond the regional headings. The entries now include (with many subheadings):

Agriculture
Anthropology
Archaeology
Architecture
Art
Arts & Crafts
Astronomy
Aviation
Biography (and by name)
Biology
Birds
Bridges & Tunnels
Canals
Cities
Conservation
Costume
Dinosaurs
Dogs
Ecology
Education
Eskimos
Ethnology
Explorers
Festivals, &c
Fishes, &c
Flags & Insignia
Fossils
History (World)
History, Modern
Indians, No. American
Indians, So. American
Industry
Insects
Institutions
Jewelry
Language
Libraries
Literature
Mammals
Mammals, Extinct
Medicine & Health
Microorganisms
Minerals
Models, &c
Molluscs
Mushrooms
Music & Instruments
Mycetozoa
National Geog Soc.
Numismatics
Photography
Physical Geography
Plants
Pollution
Religious Ceremonies
Reptiles & Amphibians
Science
Ships
Space Travel
Sports & Recreation
Technology, Historical
Transportation
Underwater Salvage
U.S. Armed Forces
U.S. Government Services
U.S. History
U.S. National Parks
Voyages
Weapons
Wildlife
Woman
World (Intercontinental)
Writing

TYPE OF INDEX. The *Handy Key* is not a dictionary or telephone directory. Apart from the standard names of countries, it is purely a "subject guide" or "classified index," which means that detailed topics are grouped under broader subjects. For example, Vesuvius will not be listed under its own name, but in the category of *Volcanoes*, which in turn is a subheading of the broader field of *Physical Geography*. This enables us (1) to eliminate the thousands of detailed entries and cross-references which would otherwise form a bulky volume, and (2) to aid the reader by grouping all related topics together (for example, to find volcanoes quickly in any part of the world, rather than checking each one by name through the whole *Key*, which would require the reader to prepare a separate list first).

Of course, this procedure demands some thought on the user's part and some familiarity with the broader subject-headings used in the *Key*, since each person's ideas of logical groupings and acceptable subject-headings will vary. For this reason our major entries are listed above, and all the *Industry* and *United States* subheads are given at the heads of these entries, along with the "see also" references (see below).

This is not a title or author index at all, and includes people only as featured subjects of articles. Some names are given to help identify expeditions, research work, etc., but only parenthetically, not as part of the alphabetical arrangement.

"SEE ALSO" REFERENCES have been liberally inserted, partly to suggest related headings in the form used in the *Key*, partly to save space which would be wasted by repeating the same citations under several headings, and partly to compensate for the lack of thousands of more specific subject headings with all their sub-chains of cross-references. As the *Key* has grown in bulk, the citations repeated for convenience under more than one entry have had to be virtually eliminated, thus making it more important than ever for the user to consider carefully all the "see also" references. These

have been given at the beginning rather than at the end of entries to enable users to avoid searching through a whole entry only to find that the special aspect they want is treated elsewhere. Under *Industry: Fishing*, for example, "see also's" will indicate related entries for individual species of fish and for sport fishing.

ARRANGEMENT OF CITATIONS. Under each heading or subheading the order of citations is seldom alphabetical as it is in the *Dogs* or *Cities - Aerial Views* entry. Rather the citations in each entry are grouped by a classification system, with related topics together. One common scheme is the **geographical** (by region), and here the order normally followed is from west to east and from north to south, beginning with the United States, then Canada; in brief: North and South America - Europe - Asia - Africa - Australia and the Pacific. Examples are found in the *Festivals* and the *Physical Geography: Volcanoes* entries. Other arrangements are **chronological,** as in the *Writing, Ships, Explorers*, and the many *History* entries; or **functional** (by types), as in the *Aviation, Mammals*, and *Medicine* entries. In addition to these more obvious schemes, many longer paragraphs have been broken into shorter ones, where the sections may not justify a subheading, but where natural groupings exist in some form.

PREFERENTIAL ORDER. Under each heading (especially the regional) priority is given to the most general and of these to the best illustrated and the most recent. Following the general articles are those on more limited areas or aspects of the entry topic (such as a city), qualified by a word or two.

As with any index, the user will find that many references (particularly the regional) give much fuller treatment than others, such as those to institutions, industries, physical geography, etc. (except for those marked "f" or "feat," indicating an entire article on the subject). The first reference under *U.S. Massachusetts*, for example, consists of a date only, but this refers to an entire major article, whereas the identification of a single picture of an industry or craft in the state might require a whole line later in the entry.

LOCATING CITATIONS. The basic treatment of the *Geographic* is by region. Citations here are usually to entire articles. In other entries, such as *Industry* or *Sports*, citations may be to parts of articles or to one picture only, and may require a little searching in the issue cited. However, the country or state is almost always named in the index, which greatly simplifies the search.

TYPES OF ILLUSTRATIONS. For all articles, colored illustrations, duotones, paintings, picture-maps, and foldouts are clearly indicated. The usual maps accompanying articles, as well as atlas or other map supplements, are not included, though special pictorial supplements may be. The paintings noted are usually those specially commissioned by the Society to accompany the article, not reproductions of gallery paintings, portraits, and the like. Also, many of the drawings and diagrams noted have elements of paintings, as do the "picture" and "relief" maps.

COLOR NOTE NOW OMITTED FROM 1955. Articles illustrated in black-and-white have become so rare since this index was first compiled that it is now possible to reverse the procedure, noting only a "b" after the date for black-and-white back through 1955, while retaining the "c" note for articles with colored illustrations before 1955 (e.g. the citations Ap50c, D56 and F60 are all to colored illustrations). Today articles with black-and-white illustrations are hardly ever found in the *Geographic*, except for occasional reproductions of historical photographs for special effects.

For references before 1955, colored illustrations are indicated by a "c" after the date, and where the colored illustrations with their complete and accurate captions are accompanied by another article, the note is "c2". (In earlier years a sequence of colored plates was presented under its own title.) Three articles of which two are in color are marked "c3(2c)." Articles not marked "c" contain as a rule a large number of black-and-white pictures with several pages of text.

ALL ILLUSTRATIONS SINCE JAN. 1955 ARE IN COLOR UNLESS MARKED "b" AFTER THE DATE. PRIOR TO 1955 ALL COLOR ILLUSTRATIONS ARE SHOWN BY A "c" AFTER THE DATE.

Occasionally, as in the *Birds* entry, the "c" will follow the number of colored pictures (more than two) rather than the number of articles, e.g., Ja74-9c(f) green heron.

ISLANDS are indexed individually except for Pacific Islands, Indonesia, West Indies, and a few islands closely associated with mother countries; for example, Jersey, Crete, and Hawaii under England, Greece, and U.S. respectively. Important islands, such as those of the Mediterranean, carry "see" references to the mother country.

CITIES are included in countries or states, sometimes under a subhead as in China, England, and Germany. The long listing of cities under the heading *Cities* is for aerial views only, as explained in the subheading.

TYPE-FACES FOR HEADINGS AND SUBHEADING. The type-face used for subheadings will indicate the ranking or subordination of subdivisions. Examples of the new arrangement:

SPORTS & RECREATION
Winter Sports
SKIING

PHYSICAL GEOGRAPHY
Climates
TROPICAL RAIN FOREST

ABBREVIATIONS. Extensive use has been made of abbreviations to conserve space. These are usually self-explanatory, but the following are listed for convenience and consistency:

anc = ancient
art = article
Aus = Austria
Austl = Australia
av = aerial view
b = black-and-white
brf = brief
c = colored; century
ca = about
ch = church
clo = closeup
coll = collective
-d = ed at end of word
diagr = diagram
drg = drawing
duot = duotone
enl = enlarged
f (or feat) = feature article on subject
fdt = foldout page
feat (or f) = feature article
Fr = France, French
-g = ing at end of word
hi-sp = high-speed photography
Icel = Iceland
il = illustration(s)
IR = infrared (photography)
Ire = Ireland
isl = island(s)
Isr = Israel
It = Italy
lg = large
M = thousand(s)
mi = mile(s)
mill = million
mod = modern
mpho(s) = microphoto(s)
ms = manuscript
mus = museum
p(or pn) = painting(s); page, as in a 2p spread
pic(pix) = picture(s)
pk = park
pl = plant
pn = painting(s)
port = portrait
pt = part(ly)
r = river
rd = road
seq = sequence (of pictures)
Sp = Spain
subh = subheading
var = variety(ies)
w = with
x = times (as in "enl 22x")
x-sec = cross-section
y = young
E, W, N, S, SE &c = points of compass
' = foot (feet)
" = inch(es)

Entry headings may be shortened to initial letter, e.g. N A under Africa means North Africa; pipef under Fish means pipefish

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ABRAHAM. D66(f,7pn) A's wanderings

ADEN. *See YEMEN (PEOPLES DEM. REPUBLIC).*

AERIAL VIEWS. *See CITIES: AERIAL VIEWS.*

AFARS & ISSAS. *See DJIBOUTI.*

AFGHANISTAN. S68, Ap72(maps) & N50c caravans thru Wakhan Corridor in NE A; N73 Turkomans' customs, horsemen of steppes; N50c, D33c2, 046; Ja60 pt, nomadic tribes; S53 American family

AFRICA. S60(3c, 2 on wildlife) esp Congo & Ghana; Jl57; D54c; Ag53c; Je35c6(c & duot); F25-2 duot(119 il); S38c2; Je26(96 il); N62 Cent A's new freedom; O22-5 N & Cent A

Mr50c2(2c) & O54c animals; F72(3p fdt pn) wildlife; Mr25c2, Ja & Jl43c2 N A; D40(f) Egypt-Libya battlegrounds; N67 NW A, Sahara; Jl72(12th cent map) world of Islam; Ap74(f) drought in S Sahara, Tuareg world; Ja34 Cent A; Ag75(f) Niger r area & Ag66 Fr W A; Ag59 (14pn) W Cent A; Ap32 pt, air phot

AGRICULTURE. *(See also INDUSTRY: FOOD, PLANTS)* Ag49c(32pn) Amer vegetables; S51c(24pn) Amer fruit; Jl76(fdt) 2p map of US crops & livestock; US land use (pns, contour plowg & topsoil duratn) latest meth to combat drought, erosion &c; N79 res on conserv of pls in desert; cures for salt-cancer; flushg salt fm flds, Cal; Jl75 Can the world feed its people? (pns of basic foods, drgs, diagrs) incl scient advances in prod of cattle, plant pathology &c; S76 clones: cells fm potat & tomat to form "pomato"; F70 revol in Am agr; farm of future (pn); mod meth of mass prod; Ag53c(US) & Mr67(Sib) agr experim sta; Jl76(pns) intensive agr for perm space colony

Jl44c2 & Ap43 wartime Brit & US agr; S54c state fairs; N48c 4-H clubs; Jl37c2 Wis; My49c, N46 Cal; S74 life on 320-acre Ia fam farm; Je79av Mich farm; 078(f) farm life, Neb Sand Hills; D43(f) farm life, Cumb Gap region, Tn-Ky-Va; Ag65 Amish farm life, Pa; Mr76 small farm life style of backwoods S Indiana; compost prep

Ag64 patchwork farms of N Ire fm air; Ap68 intensive cultiv, Neth (air view); S39 Swed farm; Je79(f) state farm in S Russ; 046 Isr collec farms; O53c & N75 Hunza farmg; hand cultiv

Crops

Agave. *See Maguey.*

Alfalfa. Ap55 Ohio; Ja46c harv, Nev; Ag37 cuttg by horse; S51c dehyd plant

Almonds. N34c Calif; Ag24 Spain; My57b harvestg fm tree, Majorca

Apples. My41c, N56, N33 NY; Jl41c & Jl38 Pa; Ap70, Jl49c, Jl44c mt of a, Va; Jl45 (6 mill awaitg cannng) & Ag40c W Va; Jl37c Wisc; N78, F33c Wash

Apricots. N34 dryg, Cal; Ap41 dryg, Rhodes

Arrowroot. Ja41 St Vincent, WI

Artichokes. N72 Cal; Ap65 Brittany

Asparagus. Mr36 harv a, Calif

Avocados. My49c Calif

Bananas. Jl65 & 046 Costa Rica; N74 protectg fm pests, Guatem; Mr42 Hond, Mr70 Panama; Ag68 Mex; D65 St Lucia, W Ind; Ja75 dustg grove w fertil, Martinique; S79 Grenada, WI; Ap55 Canaries; Ja79 Sri L; N67 Austl; D54 Congo; S70, Mr65 Israel

Barley. O76 harv, Alta; Je79 combines, Ukraine

Beans. Jl44c Md; N34 Cal

Beets. My41c, NY; Jl60(Alta) & My49c(Calif), Jl32 (Col), Mr28(Mich), Ag77(Ger), Ja38(Hung) sugar b; Mr74 gigantic sugar b, Bavaria

Blueberries. Je77, Je68 & Je55 Me

Breadfruit. D67 & Mr54c Jamaica; N34 tree, St Lucia, W I; Ja41 Grenada; D39c tree, P.R., N44c Philippines, O58c Fiji isl

Broccoli. Ja60 NJ; Ap29 Va

Cabbage. Ap71 & O38c Hawaii; D31c Ala; My41c preparg sauerkraut, NY; Jl68 Chinese c, Chichi Jima Ap29 Va; Jl59, Jl52c, S41c all oversize, Alas

Cabbage, Chinese. Ag46c

Cacao. O62 pods on trees & beans, Samoa; My46(f) Sao Tome; O67 pod x-sec, Madag; Ja53c, F44c pods on trees, W Ind; Ja27 heap of pods, Jamaica; Je42c pod colors, Trinidad; D30 pods dryg, Braz; S55 pods on trees, Indon

Cardamom. Mr49 India

Carrots. N57, My49c Cal; Ja39c Tex; D78 Ont

Cassava. F46 for bread & tapioca, Java; Ja39 Venez

Cassia. Mr49 China

Celery. D63 Fla; Jl44c N.Y.

Cherries. Mr69 & Jl37c Wisc; Mr36c Calif; D46c processg, Ore

Cinnamon. Mr49

Coca. My16 pre-Inca Peru

Coco-de-mer. D34 palm(ea fr weighs 40 lb)

Cocoa. *See Cacao.*

Coconuts. D64 & Ja53c W Ind; N41c cs & copra, Panama; Ag64 huskg c, Mozamb; Ja79 & Ap66(Ceylon) & Ag66(Singapore) gath c & sap; My38 pickd by monkey, Sumat; S66 dryg, Phil; O62 Samoa; My67 plantg c trees, Carolines

Coffee. N44c(f) Salvador; D24 P Rico; O38c Hawaii; Jl65 pl in nursery, C Rica; N44c pickg & dryg, Salv; 046 dryg, C Rica; Ag70 growg in banana grove, Colombia; My47c & 040c dryg & shippg, Colom; Ap40c berries, Venez; D30 pickg, Braz; N74 harvestg, Guatem; Ag66 (Ivory Coast) & N71(Uganda) sacked for shipmt; Je31 growg in Kafa, its orig home, Ethiop

Copra. Ag67 Cook isl; Mr68 Tonga; N59 Seychelles; Jl38 dryg, Guam; Ja50C, Mr34 dryg, Pacif isl; Jl48c dryg, Micronesia

Cork. My49c Calif; Ap50 & Ag24 Spain; N48c, F38, Ag-41 all Port; Ja23 Sardinia; Je71 Morocco; S73 Corsica

Corn. Je67 Ill; Mr54c Ga; Je44c Id; Jl41c feed c, Pa; Je77 same, S Afr; My70 Yugo; My16 pre-Inca Peru c; Ag37 cultiv field corn w horses, Kan; Mr76 contour plowg, Ind; F77(Oh), Mr74(Neb) harv; Ag39c huskg machine in Ia flds; S74 Iowa

Cotton. F41c(feat); N60 & S37 Miss; Mr54c pickg, Ga; My39 by mule team to c gin, Tn; Ja39 Tex; My66 Calif; My38c N.M; Ag68 Mex; F66 Boliv; Ap46 Ind; Ap65 Ethiop; N67 Austl

Cranberries. Ja74(NJ) & Jl75 & Mr42c(Cape Cod) harvestg; Ag77 Wis; F33c Wash

Cucumbers. Mr54c harv & picklg, Ga; Mr36 plntg, Calif

Dates. S53c & Jl50 on tree, Ariz; Je54 pickg, Cal; S70 Israel

Eggplant. My33 N.J.

Figs. N71 Calimyrna f, Calif; Ap30c La; Ag72 Rhodes;

Ja39 Smyrna fs, Turk

Flax. My59 Normandy; My48c Belg. Ap38 "roastg" f fm many lands, Belg; D46 Ore

Ginger. Mr49 Jamaica

Grapefruit. D63 Fla; Ja39c Tex; Ag69 Swaziland

Grapes. My41c(feat) growg & processg, NY; My77 mechan harv, NY; N33c NY; Jl78 Lake Erie isl, Oh; My31 grown under glass, Ill; Ja79(f) Napa vall & vineyds, Cal; D48c, Mr36 & N54 Calif; Ag32 Ont; Mr75 arbored vineyards, Arg; Jl68, Je63, N61 Italy; N74 Tuscany; Mr76 bumper harv, Sic; Ag68 & Ag24 Spain; Ap73 Madeira; Je75 dryg g, Jerez, Portug; O65 Port; Je78(f) g culture, Burgundy; F53c France; Ap38 grown in greenhse, Belg; Mr38 same, Guernsey; My46 same, Scot; S65 Switz; Je68 & S63 Aus; Jl70 Luxemb; N77 (treadg by ft) & F62 Yugoslavia; N67 Austl; Je77 S Afr

Hay. Ap66 Wyo; Je53c & Je50c Mont; Jl37c Wisc; Ap55 Oh; Ag65 Pa

Hemp. Jl65 Yugo; N44c; F42 (sorted) & My30 Philippines

Henequen. *See* Sisal

Hops. D48c Calif; Je44c Id; D46c Ore; N78 Wash

Jute. Ja67 & Mr55 Pakistan; Ap46 harv, Ind

Leeks. Ja71 Java

Lemons. My49c & N34 Calif; N61 & O59 Italy; S73 Corsica

Lettuce. My49c Calif; O77 harv, Ariz; S70 NM; Ag69 Colo; D78 Ont; O61 Viet

Licorice. D46 balg, Syr

Mace. *See Nutmeg*

Maguey. Ap51c P Rico for fiber; My78 & D51c for pulque, tequila, Mex

Mango. Mr34c Mex

Manioc. O34 gratg root for cassava flour, Haiti

Melons. My66 & N34 cantaloupes, Calif; Jl32 cantal, Col; My71 water m, Calif

Mikan. My72 Japan (tangerine-like)

Millet. Mr64 Yemen

Mint. S36 distillg, Ind

Mushroom. O65 Pa; Ja69 m sheds, Taiwan; Ap38 in grotto, Belg; My76 in caves, Mallorca

Nutmeg. S79, Mr49 & Ja41 Grenada; My41 Indon

Nuts. Ag78 pecans, Ga; Ja41c, S41 cashew, Domin; D52c palm n & oil, Congo; D30 Braz n in warehse, Braz; Jl65 water chestn, Bulg; Ag51c, S41 filberts, Turk; Ag31 betel, Indoch

Oats. Ag64 N Ire; My46c Scot

Okra. My33c N J

Olives. N46(barreled) & N34(processg) Cal; S51c ripe o, Cal; D58 Greece; N61 It; Je75 & Ap50c Spain

Onions. N41(f), Jl47c plg, Jl44 harv, all NY; Je44c seed crop, Id; D78 Ont; Jl32 Col; O61 Viet

Oranges. My49c, My66 & Ja42 Calif; D63 Fla; Ap50c & Ag24 Spain; Mr65 Isr; Ag73 Algeria; N62 S Afr

Pandanus fruit. F45c Gilbert isl

Papaya. Ja39 Tex; N36c Mex; Mr38 Martinique; Ja45c Fiji

Paprika. Mr49 Hung

Peaches. O35c Del; Mr54c Ga; Mr53c SC; Mr46c Mo; Jl32 Col; Je49c It; F33c Wash; F71 Austl

Peanuts. Mr50c Tanganyika; Mr42 & My41 shippg, Senegal; Ag53 p pyramid, Nig; Ap46 shippg, Ind; N74 harvestg, Va

Pears. My49c processg, Calif; cactus p; F34 orchds fm air, Ore

Peas. Mr36c Calif; F33 Wash

Pecans. Mr54c Ga

Pepper. Mr49 white p, Indon; black p, India; F64 curg aji, Peru p

Peppermint. Mr28 Mich srce of much of world's p

Peppers. My33c N J; Mr66 La; S50c Del; My38c red p, N M; S53c red p dryg, Ariz; S40c chili p, Mex; My57c Majorca

Pineapple. Jl60, O38c & Ap71 Hawaii, plantg & canng; N49c harv w mech pickr, Haw; D62 & Ap51c P Rico; N62 S Afr; Ja35 in hothse, Azores; Ap31 S Af

Plantain. F68 Ecuador

Potato. O48c & Jl44c Me; Je77 shippg, Me; Ag78 harv, Ga; Mr73 & Je44 Id; Mr69 Wisc; Jl41c Pa; My16 pre-Inca Peru

Potato, Sweet. My38 NM

Pumpkin. S68 RI; S50c Del; Jl37c Wisc; Jl32c Col

Raisins. My49c & Mr36 Calif; D58 Greece

Rapeseed. O76 Alta

Rice. Mr66 La; N37 & Mr35 gath wild r, Minn Inds; O38c Hawaii; N77 harv by combine, Braz; F63 Burma; O64 Cambodia; My63 Ind; S67 Jap; Jl67 Madag; S66 Philipp; Je50c plowg w oxen, Korea; Ja51c weedg paddy, Sumat; Mr63 Sikkim; Jl75, Jl66 & F72 Thailand; S64 Viet; O72 experim r plantatn to yield 3 tons per acre, Braz; Ag77 reapg wild r, Wis

Rubber. F40c genl survey; S62 & O42 Brazil; D68 Cambodia; N63 Malaya (See also INDUS RUBBER)

Saffron. Ap48c & Mr49 Kashmir

Sage. Mr49 Yugo

Sago. My41 Moluccas

Sisal. Ag64 reapg s for rope, Mozamb; S33 Cuba; Mr54c shreddg, Jam; O34 Haiti; N44c Salvador

Soybean. Je67 Ill; N73 Mex; F78 Braz; N42 stacked on Manchur docks for Jap use in explos, plastics, food

Spices. Mr49 genl survey

Squash. My49 Calif; S68 RI; Ap75 NB; Ja45c Fiji

Strawberries. N59 Calif; Jl37c Wisc; Jl41c Pa; Ap30c La; S37 Miss; O49c Que; Ja77 Cuba

Sugar. Ap58 La; F48c burng flds, Fla; Mr36 bagged, Calif; N77, Jl60 & O38(fm air) Hawaii; D62, Ap51c & D24 P Rico; O77 Domin Rep; Ja77 harv w oxen, Cuba; Ja47 processg pl, Cuba; Jl20 Cuba; O66 W Ind; Mr38c Martinique; Mr52c Barbados; My47c haulg to mill, Colom; Ja67 Pakistan; Jl75 Taiwan; N68 Austl; My75 s flds irrig by canals, Rhodesia; Je77 S Afr; Ja56(3c) Mauritius

Sunflower. Mr50c Tanganyika

Taro. My67 gathg t, Pac isl; O58 Fiji

Tea. Ja35 Azores; Ja79 pickg on terr & Ap66 pickg & tastg, Ceylon; Ja75 & Ja61 Iran; Je76, My50c & Ag42 Jap; Ja71 & My61 Java; Ja67 Pakis; Mr50c Tangan; N71 Uganda; Mr50c plantatn, Ken; S44c harv, Rhod; S64 Viet

Tobacco. S38c growg under cheesecl; Mr54c pickg & curg, Ga; Mr76 curg in "solar barn", NC; N74 pickg, Va; Mr53c SC; Jl42c & Je34c Ky; My74 cross-pollinatg, Ky, to prod hybrid seed; F77 spraying t, Ind; F72 Md; Jl41c Pa; Jl37c Wisc; D62 & D24 P Rico; Jl63 & Ag32 Ontario; Je50c curg t, Korea; Ja47c, S33 & Jl20 Cuba; Ja77 curg & rollg cigars, Cuba; Ag32 dryg, Bul; Ja59 & S41

Turkey; Je39c Yugo; Je50c curg & hangg, Kor; Ap31 S Afr; Ja72 N Zeal; My30 Phil

Tomato. D63 Fla; Ja60 & My33c NJ; S35c Del; My49c pear t & processg, Calif; S76 & Jl32 Col; Jl44c & Ap41c Md; S50 Va; My37 Majorca; Ag72 Grk isl; O59 & Ja55 It; My16 pre-In ca Peru

Truffles. S53(f) Fr

Vanilla. Ap 1 & O67 Madag; Mr49 Tahiti for perfume

Water Chestnuts. *See Nuts.*

Watercress. Jl45c WV

Wheat. My76 & F70(fdt) mile-long strips, Mont; N52c & Je53c Wash; Ja69 winter w, Ore; Ag71 surplus stored in Okla park; Mr41c Ok; My47c huge harv, SD; S51c convoy of combines & w res lab, ND; Mr36 shippg, Calif; Ag72(f) "custom combiners" harvestg w, US; O70 harv w, Sask; My79 farm grain elevs(2p), mod combines, Sask; Ja38 Hung; F76 Sib; F71 Austl; Ja72 N Zeal

Methods

IRRIGATION. *(See also CONSERVATION: LAND)* O73 irrig systms of Lower Colo riv; S51c irrig ditches w portable alumin tubes, ND; N57 & N46 Calif irrig; N52c concr ditch for wat, Wa; Ag69 sprinklers on ¼ mi arms irrig corn, Col; Jl76 same meth, Neb; Mr74 w'mills pump water for cattle, Neb; Ja72 irrig canals, Evergl; Je44 concrete irr canals, Id

D58 windmill irrig, Crete; Ag20(Turkey) & Mr15(Isr); F47(Thai) & D37(China) water wheel irr; D66 water-wheels into aqueduct, Euphrates; D46 concr i ditch, Syr; 70' wheel lifts wat to aqued; O61 & S64 irr & drain-age canals, Viet, & irr wheat flds, Mex; Je74 bldg crop-land by dredging fertile muck & placg on floatg mats, Burma; F67 pedaled irrigator; S52c pedalg trdmill irrig, Viet; N73 Turkomans clerg irrig channel, Afghan; O48c raisg well wat by cattle, Ind; My63 irr flds in Kashmir vall; Mr77 screw-type pump to raise wat to higher level, Egypt; N66 hand irr, Sudan; Ag69 irr farmg, Swaziland; Mr & D65 irr, Isr, & kibbutz coop org; D72 slopg diked squares to hold wat, Isr; Ja75 & Ap54 irr tunnels devised 2M yrs ago carry mt streams under desert w access shafts dotg desert, walld farmg commun; collectg pigeon droppgs in huge towers, all Iran; F77 Rajasthan canal for irr under constr, Ind; S49 (2p av) irr of rice flds, Chin; N52 Jinnah barrage, Indus r, divertg wat, Pak; F64 irr of dry coastal plain seen fm air, Peru; Ja33 gigan pre-Inca irr systm; My16 pre-Inca staircase farms, Peru

TERRACES. Je71 wheat and fruit trees grow on same slopes, Morocco; Jl68 terr vineyards, It; Mr59 terraces, Madeira; F66 coca terr, Boliv; Ja68 wheat terr, Afghan; N64 same, China; N69(2p), S63 & D59 rice terr, Bali; Ja51c & Mr39c same, Java; Ap66 rice & tea terr, Cey-lon; Mr69(2p; excell) & My53c cultiv Korean rice paddy; Ja69(2p; excell) terr rice paddies, Taiwan; N76 same, Bhutan; Ja69 hand-plantg rice shoots, Taiw; N71 same, Nepal; Ag64 tea terr, Mozamb; My16 pre-Inca staircase farms, Peru; Ja & O60 (Ind) terr; Mr77 rice-terr mts, completed 1000 yrs ago, Philipp

PLOWING & TILLING. Jl76 contour plowg in US today; topsoil duratn; Ag37 contour plowg, Kan; D68 (2p air pho') water buffalo cultiv paddies, Viet; Je61 (Thai) & Ja60 (Laos) plowg w bflo; O76 farmg w mules, Va; Jl61 horse & plow, Aus; N71 same, Ky; Je77 plowg w oxen, Mex Ind; S36 same, It; Je69 horse, homemade plow, Malta; Ja69 plowg w camel, Canar-ies; S42 same, Isr; N71 Nepal plow like Grk 5000 yrs ago; F79 turng soil by swingg handmade hoe like mat-tock, Nepal; S52c plowg w wood pl & bflo, Indoch; O79(fdt; many teams) & Je45c same, China; D73 use of foot-plow, Peru; Mr65 mediev hand-cultiv methods, Spain

HARVESTING. Ap65 hand-winnowg, Ethiop; N66 flailg millet; D52c hand flailg barley, Bhutan; Jl65 same w hemp, Yugo; grain flds on Danube bend; Jl50c scythe & cradle mowg wild grass, NY; Mr63 mechan-ized cotton pickers, Ariz; Mr49c same, Miss; Mr54c same shown vs hand meth, Ga; N49c mechan pinapp pickr, Haw; Ag64 hayg, Fr; F68 men & women hayg, Czech; Ag69 shaggy Icel pony pulls hay-rake; Ja69 harv winter wheat by hand, Malta; D69 same, Turkey; N64 threshg by motorized stone roller, waterg rice seedbeds, China; Je45c ox & stone roller for threshg, China; S42c flailg rice in huge basket, China; Ja69 hand winnowg soy beans & sugar cane cutters, Taiwan; F79 winnowg rice, Nepal; Ap68 winnowg rice, Viet; handmade tools used in flds; Ja74 hand-millg corn & oth meth, Laos; My62 plantg-sticks, New Guinea

FERTILIZING & SPRAYING. Ap62 fertil by plane, N Zeal; F68 sprayg banana plants fm copter, Ecuad; My66 pesticides sprayd by plane, Cal cotton; Mr53c sprayg peach orch, SC; Jl49c sprayg app trees, Va; Ag67 speed-sprayg apple crop, Vt; N60 & Mr49c crop dustg, Lower Miss; Jl66 clearg rice & cott flds w fire, Thai; N66 burng flds, Sudan; Ag21 protectg US fm imported pests

ARTIFICIAL METHODS. Ag45 hydroponics; Ja69 grapes, onions &c grown in volc cinders, Canaries; Ag69 steam fm hot springs grows crops under glass, Icel; My71 & Mr38c hothouse tomat traind in overhead arbors, Guernsey; N71 lettuce by artif light, Antarc

LIVESTOCK

MIXED. Ja52c2(f) K ng Ranch, cattle, horses, Tex; F61 Tex cattle & sheep; S46c chicken, cattle, goats, Ark; O78 cattl & horses, Neb; D74 beef & dairy farm, Wash; 350 acre Puget Isl farm; F74 cows, geese, Denm; Ja74 pigs, beef catt, Laos; My70 catt, sheep shearg, Hebrides; Ja32c Hung horses, catt, swine; O33 Arg catt, swine, sheep; Ap70 & S63 sheep, catt, Austl; Mr62 sheep, milkg horses & goats, Mong; S70 half-wild sheep, pony, Faeroe Isl

CATTLE. O73(f) yr round care of a c herd, Mont; Mr63 Ariz steers; S71 prize Hereford steer, Mont; O79 cow-boys drivg herd to mkt, Id; F70 c feed lots, Col; Ag37 (Kan Cy) & My45c(Neb) same; My76 feedg c in win, Mont; Je50c & pn cowboys' drive, Mt; Ag69 brandg c, Col; N73(Fla), Mr68(Scot), My46c shaggy Highland (Scot), My71(Jersey), My56(Fr), Mr66(La), F66 (Boliv), O44c(Chile), Ja67(Urug w gaucho), S68(Afghan) all c; Mr75 c pen & gauchos, Arg; F73 c, Brahman bull, Austl; O67(Madag) & Mr70(Panama) zebu c; O77 Ro-mana reds c, Domin Rep; Jl75 beef c grown in Jap; cow producg 10 calves a yr by transpl embryos, Can; N46 disinfectg bath, Cal; Ag69 Ngumi c(Swaziland); N71 & Mr50c Uganda longhorn c

DAIRY. Ja60 NJ dairy; D50c Neth

SHEEP. Ag37c(Kan), Ap50c(Ariz), D49c (NM), Ap66 (Wyo), Je66 (US Basques, Nev), S75(Gr'land) raisg &

shippg s, F60(Chile), N48c(Ur), D56(Tasman), Je74 (Eng auction), S69 & Mr61 (Ire), N74(Hebrides), Mr68 (Scot), Je65(Wales), S72 (Isl of Man), N68 & N67 (Austl), Ag78, Ag74 & Ja72 & Ap62(N Zeal), Ag68(Sp), S39(Swed), Jl69(Switz), Je69 & Jl65 (Romania), D69 (Turk), Ag52(Tibet) & N62(S Afr) all s, Ja71 s herdg & shearg, Tierra del Fuego

OTHER RUMINANTS & PIGS. C76 Canada's only reindeer herd(meat), Yukon; *for other reindeer see NORWAY & FINLAND*; O66 Nepal yak & calf, Ja69 (Canaries), F70(Ethiop), My54(f,NY), S46c(Ark), & Jl73(Grk isl) goats; D73, Ja73(f,pn) vicuna, llama, alpaca, &c; F64, F66 & F71 llamas, Peru & Boliv; Ja67 vicuna, Peru

Mr46 hogs, Mo; Ag39 cornfed la hogs; S78(f,pn) wild & domest pigs, all aspects; S74 breedg pigs, Ia; Mr46c swine, Mo; N69(Bali) & Jl70(Luxemb) pigs; Je78 operatn on hog, U of Pa; F70 surgery on sow

HORSES & PONIES. *(See also SPORTS: ANIMAL RACING)* My74 horse farms, Ky; N54c(f) h show, NY; O53c semi-domest Shetland; N78 h fair, Ire; My73 famous white horses of Camargue, S Fr; Ag69 & N45 shaggy Icel ponies; Mr69 same in Wis; D44c milkg mare, Sib

DRAFT ANIMALS. *(See also above, AGRIC: METHODS)* Ap66 eleph lumberjacks, Ceylon; D66 Mass prize draft oxen team; Ja69 camel pullg plow, Canaries

POULTRY. *(See also BIRDS)* S50 broilers fatteng, Del; S46c young chicks, Ark; Jl44c chickens, Ark & Md; F70 huge egg factory, Cal; Mr51c Lt ducks; Mr78 candlg eggs, Ark; Ag79 lg chick opern, Yemen

MISC. F53 rabbits, Fr; Ap48 beekeeper at wk, Tn; N79 cultiv oysters, Haw

Historical. N46(pn) Roman farm villa; D60 anc Isr; D62(pn) medieval Eur agr; Ja33 & My16 pre-Inca Peru; Mr77 rice-terr mts of Philipp, done 1000 yrs ago; My67 (3pn) first irrig of Amer SW, Hohokam Inds, BC 300-AD 1200; Ap76 horsedrawn agr implem, Vt; F77 life on Ohio r farm w no moern conven; Ap77 farm life in back country South; Jl62 Tenn pioneer traditn, Cades Cove

AIRPLANES. *See AVIATION*

ALAND ISLANDS. Ja35 sailing ships

ALASKA. *See U.S: ALASKA*

ALBANIA. F31c2, Ag18

ALGERIA. Ag73; Je60; My58; F28c2 Algiers; F49c oases, N67 pt

AMERICAS. D37 economic bonds

AMPHIBIANS. *See REPTILES & AMPHIBIANS*

ANDAMAN ISLANDS (India). Jl75(f)

ANDERSEN, HANS. C. D79(old prnts) life & 19th c Danish background

ANDORRA. *See SPAIN*

ANGOLA. S61

ANIMALS. *See MAMMALS*

ANTARCTIC. F62 rev of A explorations; F63 "new era"; Ap58 & F56(prep) triple IGY exped; Ag56(Byrd), Jl57c3 & S57c2 Byrd's last wk & review; O35 & Ag30 Byrd expeds; Ja59 & Ap59b Fuchs trans-A exped; O59 rev of Navy's wk; O47c Navy exploratns; N67 regular flights into A night; Jl36 & Jl39 Ellsworth flights; Mr64 first flight across A; O32 aerial mapping; Je67(2 fdts; 4p spread) conquest of highest A peaks; F56b IGY exped; O68 A as testing ground for space (Operation Deep Freeze '68, Natl Sci Found & US Army Resrch Progrm); N76 satell radiatn images of polar icecap in sum & win; N71 Graham Land peninsula wildlife study, Nat Sci Found Antarc Rsrch Progm; Ja66 stalking seals; D73 voyage alone in 32 ft boat, Austl-Antarc & Ag75 (pns, drgs) "Ice Bird" ends voyage around A & returns to Cape Town

ANTHROPOLOGY. *(See also ETHNOLOGY; ARCHAEOLOGY, and regional entries)* S60 finding earliest man, Zinjanthropus & O61 dating it even earlier; Ja63 (pn) "missing links" found in Tanzania (3 arts on Leakey expeds); F65 another on Zinj & Homo habilis; Je73 (pns, drgs, map) disc of earliest suggestn of genus Homo 3 mill yrs old by R.E. Leakey; D76 first "family" of early man unearthd, Ethiop, 3 mill yrs old (Johanson/Taieb); Ap79(pn,drgs) hominid bones 3.6 mil yrs old, Afr(M. Leakey); F16(5pn) "how old is man?" by T. Roosevelt; Ja75(f) explorg mind of Ice Age man; S79(ftd pic map,6pn) genl surv of late Ice Age man in W Hemis 10-48M yrs ago; D55(8pn) Ice Age Americans; Mr58b(2pn) Stone Age in Ala cave; Ja79 (pn) Ice Age bison kill, Col; Je62 Ice Age man vs mammoth in Wyo; Ap56 S seas ethnol exped, Ifalik atoll; Ap62 Maori, N Zeal; My62 New Guinea Stone Age man; Ja72 New Hebrides natives; Je63 Kalahari bushmen, S Afr

ARABIA. *See SAUDI ARABIA*

ARCHAEOLOGY.

GENERAL METHODS. *(See also sep. countries)* Ag28; Ag58b radiocarbon & O61 potassium-argon tests of age; N77 drastic revisn of radiocarb datg for prehist monumts of W Eur; My67(pns) archeomagnetism; N61(pn) body molds of volcanic ash & S59 underground periscope phot, both Pompeii; N70(2pn) temple "reconstructed" in pictures of sep stones sorted by computer; S59 aerial phot to locate buried tombs &c; O61 "air-lift" dredge, Mex; My67 meth of excavating, preserving &c; D50 latex molds of inscription; D53c unearthg tombs & buried food, Jericho

S68(5pn) underwat vacuum, phone booth, TV, sonar, decompressn chamber, resrch craft Asherah; F69 more underwater; carbon dating, cargo liftad by balloons, sand vacuum (cargo ship of 3d cent); Jl63 & Ja54c(drg) underwater methods; Jl67 anc beach hearth revealed by storm

AFRICA. *(See also ANTHROPOLOGY)* Ja63(pn), O61, S60 & F65 Zinjanthropus & Homo habilis, Leakey excav & N66(chart) preserving the finds; F69 & My70 & Ap75 Leakey excav

ALASKA. *See subh NORTH AMERICA*

ALGERIA. Ag73 ruins of Timgad, anc Roman trade ctr

AUSTRALIA. D49c Arnhem land

BAHRAIN. S79 tradg civilizatn of ca 2M BC; burial mounds

BALEARIC ISL. My76 evid of man on Menorca 3500 & Mallorca 4M yrs ago

BRAZIL. Ja79 Abrigo do Sol Stone Age site of 9M yrs ago

CARTHAGE. *See subh TUNISIA*

CAVE MAN. D48c Lascaux cave; Ag24 Montespan grotto in Pyrenees; O56 & Mr58b(2pn) Ala cave, 6000 BC. *(See also subh FRANCE & main entry ANTHROPOLOGY)*

CHINA. My74(f) excav of Han Dyn princess' tomb 2100 yrs ago & art objs found; D74(f; fdt) 2000 yr old Han Dyn burial relics & many oth; Ap78(fdt;7pn) 6M pottery soldiers guard imperial tomb of 210BC

COLOMBIA. N75 Inca gold mask & ornamts; bird pendant; My40

COSTA RICA. Jl65 jewelry of gold, jade

CRETE. *See GREECE.*

DENMARK. Mr54 body in peat 2000 yrs; weapons of Beowulf era

EGYPT. O41c2(32pn) anc E life; My23-2 King Tut's tomb, Carnarvon exped; O63(pns) E treasures threatened by Nile dam & King Tut tomb revisited; Ja76 mummy of Ramesses II; My66 saving Abu Simbel temples(pns, fdts); D48 Sinai; F44 K Solomon's mines

ENGLAND. Je60(4pn) Stonehenge; F41 Sutton Hoo Viking ship burial mound

ETHIOPIA. D76 3 mill yr old hominid skel "Lucy" Australopithecus

EUROPE. Ja75(pns, drgs, map) Ice Age man, his art & productns; N77(f) revised datg of W Eur prehist monumts

FRANCE. D48c Lascaux cave & Ag24 Montespan grotto in Pyrenees; oldest statues in world; Jl23 prehist monumts(menhirs); Britt

GREECE. Mr44c3(32pn) anc G life; Mr40c2; Jl73 Ithaca of Homeric age, 1932 dig; My72(2 fdt pns) gigan Thera volc erup key to fall of Minoan civiliz; artifacts; F78(6pn;fdt) Minoans & Mycenaeans of Bronze Age, Crete; D58 anc Crete relics; Ja54c Cousteau ship salvage; Ja68 Pella, Macedon; Jl78(pn,diagr) royal Maced tomb (Philip's?); treasures

GREENLAND. N64(3pn) & Ap70(pn) Vinland exped of Karlsefni, 11th c. Viking relics

GUATEMALA. *(For Aztecs & Mayas see also MEXICO: ARCHAEOLOGY)* D75(4 arts, 7pn, fdts, pic map) Mayas anc & mod hieroglyph records & sci, grandeur of Tikal ruins; N35c2(10pn) Mayas, chfly Piedras Negras ruins; F22(drgs, hieroglyphs); Jl31 & Ag23 Morley & Cummings expeds to Guat, Yucatan & Cuicuilco; Aztec hieroglyphs deciph

HONDURAS. Ja72 Brit Hond temple

INDOCHINA. Ap60(14pn) mediev Khmer culture, Angkor Wat; Mr71 5000 yr old artifacts

IRAN. D50 Darius & Bisitun, Asia's "Rosetta Stone"; O33(50il) impressive ruins 6M yrs old, Persepolis; Ja75 Persep ruins of Darius I palace, 520 BC

IRAQ. D66(pn) migrations of Abraham fm Mesopotamia; Ja30 digs at Ur (Mesop); Ag41 Dur Sharrukin pal wall reliefs 2600 yrs old

IRELAND. Ap76 5th c Reask stone & Celt marker or Ogham stone. Ap70 Norse settlemt unearthed

ISRAEL. D57(10pn) life in anc I & D60(13 pn) last 1000 yrs BC; D68; D53c & D51 unearthg tombs & buried food, Jericho region

ITALY. *See subh ROME.*

JORDAN. D53c; D58(5pn) Dead Sea scrolls & producers; D51; D55 & F35c2 Petra

KOREA. S75 5th c burial site, Kyongju

LEBANON. Ag74 Sarepta, Carthage, Kerkouane, Tyre digs (Phoenicians)

MACEDON. Ja68 Pella

MALTA. My20 pre-hist temples

MESOPOTAMIA. *(See also IRAQ)* Ja51c(24pn) anc M life; F16-2 (rotograv) esp cuneiform & reliefs at Assur; Ja30 Ur

MEXICO. *See main entry MEXICO.*

NEWFOUNDLAND. N64 Vikings' Vinland (pns)

NORTH AMERICA. S79(fdt pic map,6pns) surv of sites & artifacts, life style & migratns of man 10-48M yrs ago in N & S Am; late Ice Age maps; Ja79(pn) bison kill by Ice Age hunters 10M yrs ago, Arikaree r, Col; O56(2pn) Ala cave life 8M yrs ago; S67(brf) same; S42 Ipintak, Alas, vill 2M yrs old; ivory artifacts, grave; My 39 & D55(8pn) Ice Age man; F64 & S48c(f) Pueblo Inds of 13th cent, Mesa Verde; My67(3pn) Hohokam Inds, ca. BC 300-AD 1200; Ja77(diagrs) "medicine wheels" stone cairns of Plains Inds, astron tools 15-1900; S25c3 Pueblo Bonito; O56 Ala cave & S67 same (brf); N56 Hudson Bay eskimos. *(See also subh ALASKA & main entries ANTHROPOLOGY and INDIANS, NORTH AMERICAN)*

PACIFIC ISL. D74(f) Polynesians; Ja62 & F44 Easter Isl

PANAMA. Ag53c, F50c, Mr49c, Mr70

PERU. F38c2(10pn) Incas; Ap47c2 Mochica peop, Viru vall; pottery; F15 & My16-2 Bingham expeds to Machu Picchu & pre-Incas. Mr73(3pns, 3diag) Chan Chan, lgst pre-Columb cy in S Am; D73 (5pn,fdt,drgs) Machu Picchu, Cuzco &c; reconstr of pre-Colum Inca life; art obj; Ja33 M.P. fm air; F64 pre-Columb relics, stone & metal wk, burial grounds dated 4000 BC; outl of bird & monkey traced on plateau ca. AD 1; My75(f) myst of anc Nazca lines; decor pottery

ROME. N46c2(32pn) anc R life; O38 Augustan R; D35 Horace country; F57 Sicil villa; S59 Etruscan tomb pns; Ja55 pt, Sicil relics; Mr76 Grk temp blt 400 BC by myst Elymians, Segesta Sic; N61(4pn) last moments of Pompeii

SINAI. D48

SPAIN. Ag24 Phoenician tombs

SYRIA. D78(5pn) Ebla digs, Semit emp of 23d cent BC; Ugarit relics; O30, Jl33 Ras Shamra & related excavations

TRANSJORDAN. F44 Solomon's mines

TUNISIA. Ap24 Carthage excavated

TURKEY. My15 Troy today; Mr61 anc Commagene ruins on Euphrates, S T; Je72(pn, diag) & Ag67 Aphrodisias excavated, anc art & archit; My60(2pn) & My62 Bronze Age ship salvaged; Jl63 Yassi isl shipwreck 600-650 AD; S68(pns) same & 2 oth sites searched.

U.S. *See NORTH AMERICA.*

ARCHITECTURE. *(Many varying examples to be found under all countries. See also CITIES: CITY PLANNING)* **U.S.** *(See also U.S. state entries)* Ap79 Fed period homes, Salem Mass; Ja64 US Capitol(fdt); D68(feat), O54c & Ap37c2 colon Wmsburg; D70 18th c. N.C. homes, Old Salem; N53c & My28c Mt Vernon; S66 & Ap29c2 Monticello, Va; My50c(f) Jeff & Charlottesville; N64 home of early presidents + capitals; Ja61 & N66 White House; Je60 Wash museums; Ap54c Md & S64 Ft McHenry, colonial governors' mansion & State House; Ap58, F49c & N60 pre-Civil War La & Natchez homes; F51(pn,1850), Ag51c, F54 log cabins; My34 trad

hand-hewn log hse, 1912, Ga; Ag39c Ia farm bldgs; Mr74 sod-hse of Neb pioneers; Ag48c Newport mansions, RI; F53c iron grillwk balconies, N Orl; Je67 world's tallest apts, Chic; Ap78 F L Wright hse, Chic; S61 UN bldgs

Town & City Complexes. *See main entry CITIES*

Walled Towns & Ramparts. *(See also subh CASTLES and regional entries such as ITALY)* Ap45 Hadrian's wall, Eng; O69, Jl51c, Ag27 Carcassonne, Fr; Je67 Eze on Riviera; D50 Naarden, Neth, isl city within moat; Ag73 Visby, Gotland isl (Swed) fm air; Mr74 Nordlingen, Ger, w 14th c ramparts fm air; F15 Munster, Ger; Mr65 Spain; N74 mediev towers of San Gimignano, It; My70 & F51c Dubrovnik, Yugo; D50c Jerusalem; D64 Petra, Jordan; O33 walld villages, Iran; Ja75 mediev fortif town Bam, Afghan border; Je68 fortif Berber village, Mor; O33 modern walled village, Persia; Ja65 India; O65 Mustang, Nepal; Ap68 primit stockaded village, S Viet; F23, Ag60, D71, N65 & Mr38c2 Great Wall of China; F77 Gt Wall of India, Rajasthan, blt 1400's

Castles & Forts. *(See also subhd WALLED TOWNS and regional historical entries.)*

England: Jl47(f, 16 etchgs) Brit cs; My77 Maiden c in Eng, Celtic fort fell to Romans 43 AD; Ap35 Bodiam c & moat, 14th c; My64 14th cent c blt around 12th cent Norman keep; Jl36c(f) Warwick c; Mr34 Kenilworth, blt 12th c; Je61, Ja37c, Ag35(av) & F32 Tower of Lond (fm air); Jl35 Arundel c

Other British: Ag32 Holyrood, Edin; N74 & Jl52c Dunvegan c, Scot, MacLeod chiefs' home; Mr68 Eilean Donan c, Scot; Jl56 Balmoral & Invercauld, 16th c; Ag61 & Je64 Cornwall; Je65 & Mr34 Conway c, Wales; Ap33 Chepstow & Ludlow on Severn, Wales; My71 Mt Orgueil, Jersey, 13th cent; My77 prehist sea-cliff ft walls, Aran isl; Mr61, Ag64, N35 & Mr27(greatest) Viking towers, Irel; N35 & Mr27 Dunluce c, Irel; Ag64 Carrickfergus, Ulster; N78 K John's c, 12th c, Limerick; My40c Cashel Rock, Irel; & K John's

France: Je66(fdt, pict map) & O30c Loire chateaux; N15 France; Ag66 Norman c moat & bailey (drg); My36 Falaise, b'place of Wm Conq, 1027; My36 duot, Mt St Michel; Je78 Chat de la Clayette & moat, Fr; Ap65 Gothic chat, Brittany; Je39 Ft Carre, 17th c, Antibes & Chat d'If, 16th c Marseille

Belgium. Ap38 c of Godfrey of Bouillon, pre-1100; fortr of Namur

Germany. *(See main hdg GERMANY, esp Rhineland)*

Switzerland: Jl69 & O56 13th cent Chillon c, Lake Geneva; O56(2p) Sion c, 1294; Ag34c Castello di Montebello, 15th cent

Austria. My37 Aggstein c abv Danube

Scandinavia: Ap70 Viking fort earthwks, Denm; F74 & F32 Kronberg c (Hamlet's), Denm; N50c Karlsten fortress & Kalmar c, "key to Sweden"; Jl34c2 Vittskovle c, 16th cent, & many oth, Swed; S39 Malmohus c, 16th c; My68 Olavinlinna c, 15th cent Finland; F40c Olaf's c, Fin

Spain: Mr65 & Ag24 Spain; Ap50c Alcazar, Alhambra, Avila; Mr78 Moorish c, Almansa, Alcazar

Italy: S35 Italy; Jl69 13th cent Scaligeri c, Lake Garda; S51 Reifenstein c, 11th c, N It

East Europe: Ap72 Malbork c, begun 1276, Poland; F68 Karlstein c, 14th cent Bohemia; N75 13th c c at Hunedoara, Romania

Near East: F31(f) crusader cs; S15 Mediterranean region; My52 Kyrenia c, Cyprus; Ap41 Amboise gate, Rhodes, 1520; Ag45 Rumeli Hissar c blt by Turks to control Bosporus 1452; D54c, D38c, Ag41 & D33 Krak of the Knights, Syria, blt ca. 1110; perhaps best preserved & finest c on earth; F78av Masada, Isr; D68 & D50c Jerusalem walls

Africa: Ap65 17th cent c, Ethiopia

Asia: F67 & S52c Fr fort of 1802 at Hue, Viet

Forts: Americas. F66(pns) Castillo de San Marcos, St Augustine, Fla, blt 1670's; Mr75 & My67 Louisbourg, blt 1720's on Cape Breton isl; N37 Ft Mackinac, Mich, 1780; Ap51 Morro c, San Juan, P Rico; Ja76 Citadel of H. Christoph, Haiti, & ruins of his pal of Sans Souci of 1813; Ag67 Ticonderoga; S39(av) Ft McHenry; Ja50c & Ja71 & F47(av) Ft Jefferson, Dry Tortugas, US 1846; O70 Ft Prince of Wales, Hudson Bay, 18th c; D78(av) Ft George, Ont; My31 Ft Dearborn replica, Chic; S51c Ft McKeen old blockhouse restored, N.D. & Je53 Ft Abr Lincoln State Pk, N.D.

N48c(av & clo) St Teresa, 18th c f, Uru

Palaces. O34 Sans Souci, Haiti; F39 Hampton Court p fm air, Lond; Ja37c Buckingham; Ja35 Osborne Hse; Je52c Luxembourg, Paris; Mr65 Spain; Jl68 17th c p of Isola Bella, Lake Maggiore; O65 baroque p, Mateus, & Castelo da Pena, Port; N46pn Diocletian's p, Spalato; Ag77 & S65 Neuschwanstein, Ger; Je68 & F59 Schonbrunn, Aus; Ja70 & F37 Sanssouci, Berlin; My31 Wilhelmshohe, Ger; Je40 & Jl34c Drottningholm p, Stockholm; Mr33c Lazienki p, Warsaw; Ag38 Praha; My71 royal summer palace, Leningrad; F77 Lallgarh p, Bikaner, Ind; D40c Gaekwar of Boroda's p, & Maharaja of Mysore, Ind

Other Historical. Mr61 anc Commagene throne, Euphrates; Ap58 Phoenician temples; O16 (entire) Italy anc & mod; O38 Augustan Rome; Jl51 Roman amphithea, temp & Pont du Gard aqueduct, Nimes; My73, My56 Rom amphith, Arles; Je49c Rom arena, Verona; F57(f, drg) imperial villa ruins & wall mosaics, Sic; Ja55 anc Grk thea, Taormina, Sic; F70, O67, Ap58(model) & Ag65 Roman temp ruins, Baalbek, Lebanon; F62(av & clo) Rom amphithea, Yugo, Je56b same, Trieste; & Ag64 in Arles, Fr; Jl63(fdt) Acropolis; Ja56(2p) Parthenon, Athens; D69 temp of Diana at Ephesus, 25,000 seat theater, one of 7 wonders of anc world; F78pn Minoan p, Knossos, Crete; Mr76 Grk temp, Segesta, Sic; Ja68 Hadrian's temple, Ephesus, ruins, anc Delphi; D22 anc Grk & My23 anc Egypt archit; Ja68(pn) anc Persia palaces; Je72(pn) & Ag67 Temp of Aphrodite, stadium, thea, Aphrodisias, Turk; S78 Roman ruins, Palmyra, Syr; Ja79av Sigiriya, 1500 yrs old, Sri L; D75 Mayan arch, Tikal, palace of Palenque late 7th c, Uxmal, Tulum; O68 sacred precincts of Aztec capital (model)

My28(Sutton Courtenay) & Ap45 15th cent Eng manor; Ap45, My48c & Ap35 tradit Eng domestic styles; Ap74 16th c Lond shops; Jl74 restored 15th c resid, Eng; Je74 old stone hses & 17th c mansion, Cotswolds; S74 17th c Eng hses; Ag61 thatch & stone cottages, castles, Cornwall; Je31 thatchd stone cott, Aran isl, Ire; Mr35c thatchd farm hse, Pol; My55(Bruges) & Je58 (Brussels) & My48c 17th c Belg bldgs; Ap38 16th c guildhse, Belg; Ag33 16th c bldgs, Ger; Je78 500 yr old hses, Fr; F30 stone "beehive" homes, S It; S65 slant-

walld Swiss town hses of 17/18th c; F59 Aus bldgs; Ap38 Alp chalets, Aus; Ap70 Viking-style home; F64 colon bldgs, Peru

Ag42 trad Jap hse constr

Modern. Je66(Lond), Je60(Fr), My74(Amsterdam), O60(Rotterdam), Ja63(Copenhagen), My68(Finl), Ag69(Icel), Je68(Vienna) Mr63(Caracas), Ap72 (Poland), Mr66(Moscow), My71(Leningrad), Ag65(+ hotel, Lebanon), Ag66(Singap) & O64(Tokyo) modern apts; S59 Russ mod & trad; S60 S Afr housing projts; O77 govt apt hsg Domin Rep; Ag76 same, Venez; Ag76 pumpkinlike ultra-mod homes (plastic?) Venez; My60 Brasilia; D62 pre-cast concrete homes, P Rico & S63 concrete shells of Sydney Op Hse

Religious. Jl22 cathedrals of old & new world

S50c & O49c Ste Anne de Beaupre, Que; Jl68 igloo-shaped RC ch, Dist of Mackenzie; O74 Russ Orth ch, Aleutians

D64 Wash DC chs; Ag69 tetrahedral all-faith cath, AF Acad, Col Spr; S78 ch designed by Saarinen, In; Jl45c Santo Tomas Cath-Ind ch, Chichicastenango, Guat; D62 mod Cath ch in P R

D39(16 etch) Eng caths; Mr76(f, old pr) Canterbury cath; Ap63 Exeter cath; F33 Whitby abbey; Ap45 Battle abbey, 11th c, Hastings; Ja41 Winchester cath; Ap33c & Mr34 Worcester cath; O54 12th c Norman abbey restored, Hebrides; D38 St Michael's Mount, Penzance harb, Eng

Jl50c Notre Dame, Paris; Ja45(clo) same, portals; O36 same & Sacre Coeur; Je77(f,pns) & My36(f,22 duot) Mont St Michel; My68 Ste Chapelle & Notre Dame; D69(2fdts,plan) & Je60 Chartres cath; Ap65 wooden ch decor, Brittany; Je78av Vezelay basilica; Jl51c Ste Cecile cath, Albi, S Fr; Mr56 Lourdes cath, Ch of Rosary

My48c Tournai cath, Belg; Ap38c ch of Peter & Paul, Ostend, Belg; Jl71 Fantoft stave ch, 12th c, Norway; Jl34 mediev monastic archit, Sweden; Je33 Nikolaikirché, Hamburg, Ger; D45 St Stephen's cath, Vienna; Ap32av Valsainte monast, Fribourg, Switz

Ap61(2c), Je57(2p), Je49c(portals), S51(av, Piazza), S35c(pt of front), N72(in flood), S36 all St Mark's, Venice; Jl67 Cath of Sta Maria del Fiore, Florence; S35c St Anth, Padua; Mr40av & S35 Milan cath; Je70(f) St Peter's & Sistine Chapel

Mr65 Span chs; Ap50c Moorish minaret in Sevilla

Mr66 & S59 St Basil's cath, Moscow; F68 400 yr old wooden ch, Czech; Je69 Sucevita monast, Romania; Ja56, Ag51c, Ap44 & Ja39 Sta Sophia, Istanbul; D69 its interior; N77 Maltese temp & Irish tomb predate 3600 yr old Mycenaean stela

Jl70, Jl77, Ja68 & D39 Byzant Cappadocian rock chapels; D66 4M yr old ziggurat (stepped tower) of Ur(pn), Dome of the Rock, 7th c mosque, Jerus, & minaret tower, Baghdad; D68 Dome of the Rock (of Abraham), Jerus; Ja75 & S39c(Iran), D64(Amman, Jordan) & Mr64(Sana, Yemen) mosques & minarets; S39(f) gilded domes, Meshed & Isfahan, Iran; O51c mosque w minaret, Isfahan; F52c minarets of Yemen; F46c same & mosques, Bahrain; Ja66(fdt) Haram Mosque, Mecca; N78 Sacred Mosque & Kaaba, Mecca; S & Ja68 Blue Mosque, Mazar-i-Sharif, Afghan

O60 Taj Mahal &c; My63 Taj & stone latticewk of palace; D40c same & Jami mosque, Delhi; N47(2c) Gt mosque, Delhi; Ja67(fdt) Badshahi mosque, Lahore; Chandanpura mosq, Chittagong, muezzin on towr callg to prayer; S72 Chawkbazar mosq, Chittagong; Mr78 Tikse lamasery, Ladakh, Ind; O43 Jain temples, Kathiawar, Ind; F79av great stupa, Bodnath, Nep; Ja50c gilded Chaitya Buddha dome, Nep; Mr35 Pashpatinath Hindu temp, Nep; My53(f) sculpt temples, Ind; D40c Chamundi temp, Ind; Ag46 Gt Chorten of Nenning Gompa, Tibet; Potala Hill, home of Dalai Lama, Lhasa; O74 combin govt bldg, royal chapel of monast, Thimphu, Bhutan, blt w'out nails or pap plans; royal pavilion; N76 Budd shrine, Tongsa, Bhutan; Mr22 Thailand & Burma temps & statuary; Mr49c & F47c Wat Arun temp, Bangkok; My34 Wat Benjamabopitr, Bang; Jl66 Wat Phra Keo temp, Thai; Mr71(f), F63, O43 & O31 Burma pagodas; Pagan, Shwe Dagon, Shule &c; N62 decorated Thai monasteries, temp; Ap60 Angkor Wat, Cambodia; Ag52c Angkor Thom, Viet jungle temp, capital of vanished Khmer emp; Ja71 10th c Java Hindu temp; Ja51c Borobodur Buddh temp, Java

F30 Lamaist monast of Labrang, China, housg 5M monks; N64 Temp of Heaven, Peking, tomb of Tai Tsung &c; O64 Tokyo shrine; N53c Buddh Kojoji temp, Jap; S67 Phoenix Hall of Byodoin temp, Uji, Jap, 11thc

Je35 Mosque of swords, Tunisia; D72 St Cath monast, Mt Sinai; D70(f) mediev chapels, Ethiopia; Ag66 mud mosque, Mali

Primitive. My44c Afr mud huts; F62 Kano adobe vill; Ja60 mud-brick apt hses, Aden; F58 hangar-like halls of sheiks, Iraq; Mr64 thatched mud huts, Yemen; S78, Ag65, D66 & D33 beehive shaped houses of sun-dried clay, Syria; D49 Pueblo adobe apt hse, 1540; S48c(f) Mesa Verde cliff dwellers; F58(Iraq) & D44(Isr) reed houses; F73 palm-frond hses & boats of Oman fishermen; N62 grass-thatched huts, S Afr; F70 brush igloo & Ja73 thatch-&-bamboo huts of Dorze people, Ethiop; F33 mud fm termite homes plaster basket frame hut, Sudan; O54c huge wattle-and-daub hse, Kenya(Masai); Ag66 beehive huts of Mali tribesmen; Ap31 Zulu hut uses growg trees; Mr69 thatched mud huts on cliff-sides, Mali; S56(2p) adobe vill, Kano, Nig; Mr59 grass huts, Braz; Ja66 "haystack" hses, Braz Inds; Je66 brush huts, New Brit; My62 New Guinea "spirit hses" & grass huts on posts; Ag67 thatch roof, walls of palm fronds supp by coconut trunks, Cook isl; Ja77(diagr) main hse & "cool tower" of bds & thatchd roof, Orchid isl (Taiwan); Ja65 thatched huts on stilts, Viet; Je74 same (teak pilings) Burma; Ap68 thatched huts &c, Viet; S66 & Ag71 palm-thatched hut on stilts, Mindanao, & vill on stilts for fishermen, Philipp; tree houses; O40 thatchd Ind fishg vill on stilts in sea, Colom; S45 same, Sarawak, Borneo; My76 hses on stilts in wat, sea gypsies of Philipp; Mr69 houses of rice straw & dried mud, Korea; Je50c thatchd farm home, Korea; Ag66 vill on stilts, S Dahomey, Afr; Ag62 grass huts, Timor, Indones; Ap76 hses of reeds on isl made of reeds, S Iraq; Mr71 woven bamboo houses, Burma, N69 thatching roofs, Bali; Jl75 communal hut of palmfrond thatch, Andaman isl; N63 (N Borneo) & Je65(Saigon) homes on stilts over water; F73 pole hses of bamboo, Bangladesh

Mr62 Mongol yurt; Ap72, N50, Ja36 & Mr32 Kirghiz yurts of var types, Afghan; Ag54 Laplander's

skin tepee; Mr63 mud-covered Navaho hogans & interior; Jl52c sod hse, Alaska; Mr74 steps in makg igloo, Alas; Je68 bldg mud mansion, Morocco; Ag69 bricks of mud & dung; S62 hses on long rafts, Braz; F47c same, Thai; O57 Sp gypsy cave dwellers; D39c2, Jl77 & Ja58b Cappadocia volcanic cone dwellings, Turkey; F35c2, Ag65 & D64 rock city of Petra, Jordan

Bridges. *See main entry.*

Incidentals. F53c(La), F49c(Miss), Mr54(Ga), D31 (Ala) ornam iron grillwk; Ap78 entry ironwk by Sullivan, Chic

Construction Methods. My66 (pns, fdts) saving anc temps at Abu Simbel, Egypt; Je66 slitting tree into boards w wedge & steel axhd, New Brit; Mr67 hand-hewn dwellings in Sib Arctic & pile-driving in permafrost; N76(fdt) anat of Alas oil pipeline in permafr; Ja76 details of L.A. aqueduct in Owens Vall, Cal; Ap74 all-wood hses under constr, Cal; Jl62 notched plank constr, Tenn mts; Je34 2' wide hand-hewn logs for walls of NC hse; S66 pile-driv for Moro hse in Sulu isl; Ja50c hse of tuff(soft lava stone) roofed w flax, Tristan da Cunha; F54, Mr52 & F39 sawing Bermuda limestone; O50 Incas' mortarless stone constr; Ap71 same, Aran isl; Je74 & My48(slater) tradit stone & tile wk, Eng; Mr73 makg adobe bricks, Peru Inds; Je39 thatchd Croatn peas hse, Yugo; N35c thatchg, Ulster; Ja37 Arab woman weavg hse wall; Jl73 high bamboo-jute scaffold, Thai; O33 bamboo & mud constr of Korean home; O74 elab bldg in Bhutan blt w'out nails or paper plans; D75 log hse blt fm raft logs in W Alas on Yukon; My42 log cabin constr, Yukon; Jl52c Esk bldg log cabin; S75 prefab hse under constr for Gr'land Esk; Mr74 interior of sod hse w walls 3' thick, Neb

My67 geodesic dome (netwk of steel girders, Expo 67)

Je50 blasting at dam site, Mont

D50 concrete houses blt in row (multiplex), Neth

Historical. O41(pns) anc Egyp meths; Ja30 "slime" of Genesis (asphalt) as mortar by Arabs

ARCTIC. *(See also ALASKA; CANADA: MACKENZIE; and GREENLAND)* O51c & N25-2 Macmillan expeds; S26 (Pole) & N25 Byrd flights; S78(av of Pole) Jap explorer Uemura 1st solo to Pole w dog team; My46c2 Bartlett servicing air bases; Jl58 DEW line; Jl68 DEW sta at Tuktoyaktuk & A Ocean shores, N Can; O71 Alas N Slope & devel of oil wells; Ja59(pn) & Jl59 nuclear subs under polar ice cap; O53 & O54 Peary(hist); Jl57b Byrd(biog); My62 Camp Century under Gr'land ice cap; F65 Staib exped toward pole & N65(pns) more on ice isl Arliss II & III & Arc Resrch Labs; Mr74 trek acr A Amer by Esk dogsled, NW Territ (Repulse Bay, N of Hudson Bay) to Pt Barrow, Alas; Ap53 ice isl; My64 Banks isl; Ap57 A plants; Ag38 air search; Ag22 A as air route of future by Stefansson

ARGENTINA. Mr75, Mr58, N67, N39c2 & O21 Buenos Aires; O33c2 Pampas & gauchos; D37c2 Cape Horn; Je76(pns) Magellan roundg Cape Horn; Mr76-3 A protects its wildlife; Ja71 Tierra del Fuego sheep ranch; My31 Andes by air; D76(f) climbg Torre Egger

ARMAMENTS. *See WEAPONS.*

ARMENIA. *See TURKEY.*

ART. *(See also subh SCULPTURE)* Ja52c(24pn), N56 (22pn), S48c(24pn) Amer art & Jl40c(32pn classic & Am) all classics in Nat. Gall; S62 Am "primitive art"; F51c(33pn) Am hist in a; My61(24pn) great Impressionists; Je71 Louvre hist(fdt plans) many noted pns; Mr67-2 Fr a of 19-20th cent in Nat Gall; N78 openg display of new East Bldg; Ap49c(51pn) Brit hist in a; Je50c (23pn) Vienna treas; Ja63 Danish Designs; Jl71 Henie-Onstad Art Ctr, Oslo; My71 Leningrad State Hermitage Mus & treasures; Je63 Mona Lisa; D61 Kress colln; N78 a treas of Dresden exhib, Nat Gall; D48(23pn) Renaiss; S77 (f; drgs, pns, mss) Leonardo da Vinci, a & life; Je70 Michelangelo's fresco, Sistine Chapel; N72 art of Venice, Renaiss pns, sculp, archit, ceramics; Jl67 flood damage to Florentine a treas; Mr79 15th c Flem pntg techniques & pns; N61 Pompeiian wall pns, statuettes &c; Mr40c mosaic, Herculaneum; S59 Etruscan tomb pns; F57 (f; pn) anc Sic mosaic a & archit; Je74 Roman mosaic pavg, Eng

Ja64 early Christian a in Mt Sinai monast, icons, mosaics, pns, mss; D70 mediev church frescoes, Ethiop; D62 mediev Byzant mosaics; Mr66 12th c Byz pn, Moscow; D69 gilded saint on Byzant chest, Turkey; Ag74 Phoenician arts, bronze wk, terra cotta mask &c; Mr40c5(2c) Greece & Rome, pt art; Je72 & Ag67 Greco-Rom a excav in Turkey (Aphrodisias); Jl78 Maced wall pns, medallions &c; tomb of Philip; Ja68 mosaic, Pella (Macedon); bas-relief on Persepolis wall (& Ja75); Jl70 mediev frescoes in Cappadocian cave chapels; O63c2 Egyp sculpt & bldgs (pns); Mr77 & N55 Egyp a & sculp; figurines, murals; N70(2pn), O41 & Ap40c anc Egyp murals; Ap40c2 & My65 Egypt, pt art; F78(fdt) Minoan wall pns; My77 anc Celtic a; Jl72 Islamic a, Persian relig a

Ap66, Ja79, & N46 Sigiriya frescoes & child artist, Ceylon; S68 mosaic panels for mosque, Afghan; O66 Sherpa rock inscr prayer; Ap60 Angkor Wat, temp & Khmer a, Cambod; Mr71 7th c Thai pict scroll & temple mural, Burma; My74 anc Chin a objs of Han Dyn, Hunan prov tomb of 2100 yrs ago: decor, figurines, lacquered ware, fine silks &c; Ag79(f) 14th c Chin stoneware (celadons) salv fm Yellow Sea

Ja77 Austronesian motifs on Yami wall pns, isl off Taiwan; Mr55(18pn) Am Ind style; My67 Hohokam Ind anc shell etch, sculp & pottery; Jl73 pre-Colum Mayan gold figs; Ja75(f) cave wall & oth a of Cro-Magnon man in Eur 37000 yrs ago; map locates all cave pn sites in W Eur; D48c Lascaux cave pn; Je63 cave man of S Afr; Ag73 rock pns & engravgs, Alg I-6000 BC; S79 22M yr old engravg on mastodon bone, Mex; Ag66 prim Afr a, Dahomey & Niger; F73(f) rock pns of Austl aborig

Mr57(22pn) children's pns; Ag63 animation explained by Disney; Je66 Royal Acad auction at Sotheby's, London; Je71 ultraviolet inspectn of pns; N74 restor of pn of 1200's pntd over in 1600's & 1700's; Ja46 lootg of Eur a, WWII; Je68 A. Wyeth & pn; Ag70 Norman Rockwell in studio; S71 T.H. Benton in studio; Ag68 Mex muralist Siqueiros at wk; O68 Aztec a & sculpt, Natl Mus of Anthrop, Mex Cy

Sculpture. *(See also ARTS & CRAFTS: PLASTIC &c)* My69(pns) & My66 Abu Simbel, Egypt, temps & statues; O41(pns) anc Egyp sc & archit; Ag72 mosaics,

figurines, Crete; F78 Minoan clay figs, gold obj; O33 friezes of anc Persepolis, Iran; My77(8pns, fdt) anc Celtic sc & crafts; Mr40c2 incl Gk & Rom sc & archit; Je72 anc Grk a & sculp, Aphrodisias, Turk; Ap57 Roman sculp & archit; Ja74(fdt, 12p sect) gold master-pcs, Cellini wk, anc Egypt gold friezes; N55c Rameses' gt stone faces, 2 views, sphynx; Ap40c Colossi of Memnon & Sphynx; N74 s by mod goldsmith; bronze fest mask 80 AD, s sch, Carrara; D75 & D51c anc Mayan sc & bas relief on palaces, temples, Quirigua(Guat), Copan; O68 Aztec, Maya & c'h anc sc in Mex Natnl Mus of Anthrop; D51c a few more; F71 pre-Inca sc, Boliv

My53 sculptured temp caves, Ind; My63 lifesize statues swarm over temple, Madurai, Ind; Mr35 Budd sc & art, Nep; Ja79 granite monolith Buddha, Sri L; Jl73 cleang statues atop Wat Arun shrine, Bangkok; Mr71 sc, jewelry &c, anc Indochina; D36c statuary in temp gardns, Peking; Mr51c(f) Chin Buddhas; D74 figurines fm Chin tombs 2000 yrs old; bronze figs 3000 yrs old; Je76 53 bronze Buddha, Nara, Jap; 8th c; Mr38c China's gt wall of sc, Yun Kang; Mr79 anc Nig figs

Ap61 Celtic cross of 10th c, Scot; Je66 restoring castle carvings, Fr; D69 O T prophets in portal frieze, Chartres cathed; Jl48c & D54c Stat of Lib; Je51c, My47 & Ja49 Mt Rushmore monum; F69 Stone Mt, Ga; N50 Iwo Jima's flag raisers; S45 Gloucester fisherman monumt; Minuteman; Je52 Venus de Milo; Ag54c & Ag48 Vigeland's Frogner Pk, Oslo, carved pillar; Mr66 Manizer's statues of Lenin; My68 s of beads & steel frame, Finl; My70 stat by Mestrovic, Yugo; D68 snow s, Japan; My75 Afr soapstone carvg; Ap75 ebony s of Tanzania

ARTS & CRAFTS. *(See also ARCHAEOLOGY, ART, INDUSTRY subhds Manufactures, Publishing, Textile, MUSIC, and TECHNOLOGY, HISTORICAL)*

General. D68 a & c of colon Wmsburg, silversmith, tooling leath, decor carving, leath mug & bootmaker, blacksmith, paper & cabinet making; N72 Monterey A&C festival; Ag33 cottage crafts, Bl Forest, Ger; My78 wks of Tarascan Inds, Mayas, Zapotecs, Aztecs &c; clay figs, water jar, gold & silv obj, handmade looms &c

Folk Dance. *(See also MUSIC)* S42 Esk d to celeb whale hunt; S66 Sarcee Ind d, Alta; Je65 Chilkat d'ers, Tlingit Ind; S70 eagle d, Pueblos; D49c corn d of NM Ind; O61 mod Aztec d'ers

Je64 & My40(NS), Jl52c(Skye), Ag35(Scot) Highland ds & bagpipes; Mr68 Scot sword d, bagpipes; Ap63(Swed), Jl71 & My35(Norw), Ap72(Pol), Je69 (Romania), My70(Yugo), Ja68(Macedon), Jl68(N It), D74(Aragon, Sp) all f d; Ag68 D of Zamalzain, Basque d & diffic jota d; Mr56 Basque d; Ap50 Sp gypsy d; Mr65 f d & ballet, Madrid; Ja55 tarantella d; Sic; N38 Romanian whirl

O53c Hunza war ds; O74 royal d troupe in anc drama & sacred ds, Bhutan coron; thea costumes of human bones; N63 olek bandal, Malay harv d; Ag61 Lao d

Ja51c Java d; Ja51c, S63, My61, D59, Ja & Mr51c Bali d'ers; Mr39 trance d, monkey d, Bali; Jl77 fertil d of N Guin tribe; My74 native d, N Hebr

Mr69 Korea folk d'er; Mr62 Mongol f d & stringd instrumnts

Mr69 ritual d, Mali; N71 & D54c Watusi d; O54c Masai cerem d, Kenya; S61 Angola native d; Ag64 masked d'ers, stilts, Mozambique

S71 huntg d, Austl aborig

Other Dance and Theater Arts. *(d=dance)* N41c & O35c2 oriental drama & d; D64 Philipp dancers in D C; Mr63 Lamaist demon dancers & masks; Venez devil d'er w bull mask; O74 demon masks, Bhutan; O66 lamas enact stories fm Buddh scriptures; F66 & O50c devil d'er Boliv, making devil mask; Ja66 Waura Inds, Braz, ds; F47c Siamese stage; O61 native drama, Viet; O64 masked & unmasked d'ers, Cambod; S52c, Ap51c & O34 Cambod d, duel, &c; S49 stilt d'ers, China; Ap50 Jap fan d'er

BALLET. Je66 Nureyev d'ing, Covent Garden; Mr66 Bolshoi ballet, Moscow; My71 Kirov Op & Ballet Thea, Leningrad; F76 Novosibirsk's Thea of Op & Ballet, Sib; F74 Royal Danish ballet; Ag66 Singap ballet; F67 Hue ballet, Viet; Je68 & S63 ballet, Aus; F69 (Atlanta) & Jl69(San Diego) ballet; D51 Thai classic ballet

DRAMA. D66 Camelot perf, Hyannis; Je68 Boothbay Playhse, Me; Ja69 Ashland, Ore, Shakesp Festival; Mr70(feat) Ford's Thea, Wash; D67 street thea & opera hse, B Aires; D79 Royal Thea, Copenhagen (old prnts); N74 theat w 2 actors, Hebr; N41c chin thea grp, Singap

Jl67 Thai drama, d-rama, N71 Nepal street drama, Hindu epic; N70 day long relig d drama, Sikkim; Mr71 pwe d & entertainmt marathon, Burma; N69 anc Hindu relig drama Ramayana, Bali; My61 same, Java

PUPPETRY. Jl63(Athens) & F53c(Kota Bharu, Malaya) rod puppets; My61 Indon wayang puppet & human drama; O64 & Mr70 kabuki thea, Tokyo; N53c Jap puppets 2/3 lifesize; Ap38 str puppets, Aus; D60 Jap drama, puppets, & Mex d & str instrum; O61 Mex finger puppets

Weaving &c. *(See also INDUS:TEXTILE)* Ag19 weavers of world; D33(NC), My39(Que), O54c(Hebr), A154c & F40(Finl), S39(Swed), My35(Norw), My63 (Ind), spinning wheels

BASIC WEAVING. S48c prim Navaho loom ws blankets; F64 tradit Zia Ind belt-loom; Je77 Mex Huichol Ind back-strap loom; yarn pn; hand-made candles &c; O47c Guat Ind wn rugs, shawls; Mr73(pn) anc Chimu looms, Peru, w fragm of cotton cl, anc spindle; F64 anc Peru Ind belt-loom still in use; My64 prim cott spinng, plantg, cookg, Braz Ind

O49c & My39 home loom, Que; spinng yarn on wheel; Je69 nettg a canopy for 18th c bed, Mass; Ag40c sp wheel & loom; patchwk quilt, WV; Jl42c & Je34 wg way thru college, Ky

N35 & Mr27 linen & damask hand-loomed, Ire; Ap71 home wg & knittg, Aran isl; O53 lacy woolen shawl, knitted sweaters, Shetlands; My46c hand-wg woolens, Edin; F47 wg Harris tweed; Ap38c hand wg tapestries, Belg; Jl30 wg table cl, Norw; O38 hand-loom, Fin; Je69 crochetg wool blanket, Malta; spinng wh & wg wool; My52c wg intric figurd cl, Cyprus

Ja36 crude loom for Kirghiz homespuns; D40 wg gold & silv thread, Ind; O48c Ind girls wg turbans; Ap48 pashmina wr, Kashmir; Je74 wg silk, Burma; Jl66 simple belt loom, Thai; F53c wg silver lamé sarong, Mala; Ja51c handwg, Bali; My50c fingernail tapestry wg, Jap

Ja73 wg cotton cl, Ethiop; S56c hand loom, Nig;

My41c narrow loom, Senegal

My48c & Ap38(Belg), Jl51(Fr), Je63, O59 & S51(It), F62(Yugo) lacemakg

EMBROIDERY. D39c(P Rico), Ap34(Romania), D30 (Gr), Je39c & S30(Yugo), O42(Ind), F54c(Hong K) & N54c(Kazakh) embroid, N58c team of embroiderers decoratg table cl, Kashmir, Ap48c & My63 brocade & embr w gold & silv thread, Ind; O42c ornate designs embr, Delhi; Ag51c repair of gold-embr silk, Turk; Ap69 3 yr old apprent embroiderer sewing sequins, Macao; Ja74(fdt) Ming Dyn gold embroid; My74 2100 yr old Chin royal tomb w woven banners, garmts, fine silks, &c, O74 mammoth embroid chf treas of Bhutan monks; Ag66 Bayeux tapest of Norman Conq; Je50 Korean needlewk

RUGS. Ap43c(N H.) & My40(N Scotia) hooked rugs, 3 clc, & O51c, Jl49c hand-loomg r, Va; Je68 purse of petit point, Vienna; O65 designs stitched on rugs, Port; pottery figures; N19c Bokhara rugs; Je69(Ruman), Je41(Yugo), Ag73(Alg), Je52c & S39(Iran), Ap40c (Egypt) & Jl70, Ja39(Turk), O60(4c India) weavg rugs by hand; D54c Caucasian rugs, Beirut; Ap74 rug weavg, Damascus; O51c, Ja61 & Jl58 Iran rugs; Je52(3c) 7 women wg lg r, Iran; Ja68 rug cleang, Iran; N73 rug woven by Turkomans on home loom, Afg; Ap48c r wg, Kashmir; Ag46 r wg, Tibet; Ja67 carpets in Pakis jute mills

OTHER MATERIALS. Jl49c wg bakets fm sapling strips, Va; Ag36 Cherokee bas wrs, NC; F64 Hopi & Pueblo basketry; Mr38 wg lobster pots, Guernsey; F73 bask wn of bamboo, Bangla; Ja51c bask & hats of rattan, Java

F68, D41c, D37 "panama" hat factory, Ecua; Je66 wg willow chrs & screens, Fr; Ap54 baskets &c of raffia, It; Jl66 bamboo wg, Thai; O40 wg cane seats, Phil; Mr34 wg mats fm maguey fiber, Mex; Ap52c wg & dyeg reed wall panel, NZ

S71 & Mr68 lg tapa sheets pounded fm paper mulberry bark; F60 cloth hammerd fm bark by Afr pygmies

Plastic, Graphic &c. *(See also ART, INDUS: PUBLISHING, MFG & METALLURGY, JEWELRY, MINERALS, MODELS and WRITING)* Ap73 Pa Dutch woodblock prntg, hex signs, cooperg; Ap58 Lebahese carved tableware, brocade weav; S72 arts & cr of Japan; N63 & F53c(Malaya) & Ja51 & F46(Java) & Ap66(Ceylon) batik; Ag50c(Switz) & My51c(Conn), Mr55(Pakis), O60(Ind) blockprntg fabrics; F56 color sep drg at textile printers, Austl; Jl68 silk screen prntg of silk, Como; Ap66 prntd saris, Ceylon

METAL AND STONE CRAFTS. Ap & S33 gold & silv art obj thru hist; Ag62 Conn silversmith; S68 Gorham silver plant, RI; Ag54c enameling silverware, Norway; Ag73 metal sculp, Gotland; Ja64 carvd metal bk cover, bronze cross &c of 6th cent, Sinai Monast; Ag73 brooch of Berber, Alg; Ag71 lost-wax forging of brass swordhilt, Philipp; My77 anc Celtic metal wk, blacksmithg; Celtic wheel rims forgd 500 BC; Jl78 metalwk fm Maced tomb 4th c BC; N64 Viking metal ornamts &c; Jl61 handcr ironwk, Tirol; carvd wood figurine, engr cryst glass; My72 metalwk shop & shapg brass tray, Egypt; D59 & Ap46 Ind brass wk; D66(Baghdad) & Ag68(Mex) coppersmiths; Ja65 17th cent Sp coins, jewelry & silverware fm sunken ship; Ap69 Esk girl carves nephrite fig w diam drill; Alas; My77 makg pewter vases, Malaysia; Ja74 goldsmithg & gold art obj thru hist; F63 gold gilding for temps & statues, Mandalay; My63 gold chessmen, Ind; O60 inlaid stone mosaic (pietra dura), Ind; Mr76 ornam stone-carvg & hickory ax handle, Indiana; Ag46 carg gargoyle for Westmin Pal; D68 stone carver, Jerus; O48 stone carvg tombs, Ind; F69 soapstone carvg, Kenya; N77 Inuit Esk carve chess set of soapstone; O73 carvd stone snuff-tray of pre-Columb Inds, Peru; stone & wood carvers, Yugo

IVORY. D66 scrimshaw wk on whale tooth, Mass; Mr67 ivory of mammoth carvd by Yakut sculptor, Sib; Jl52c bow drill used by Esk in ivory carv; F76(Sib) & D76 (Alas) carved whale tooth

WOODCARVING. S65, Jl61, Ag60, S51c & Ap38 Aus wd carv & marionettes; S65(Swiss), D35(Ger class), Ag43c(Breton), F54c(Bermuda), N70(Ozarks), Ap43 (Vt), F39(redwd burls, Cal), S50 & O49(Queb) & S51c (N It), Ap48 & N58(Kashmir) woodcarving; O59 Ital w carver/grocer at wk; Je68 wood-carved portico, Me; Jl75 Ozark fam carves wood figs; S77 huge rosewd hand-carvd dragon table, Cal; F74 Danish furnit designer; Ap74 carvg wood chessmen, Damascus; Ag64 Mozamb wdcarv; Mr52 carvd fig, Congo Cath sch; F79 wd carvers, Nepal; Jl67 carv teak eleph, Thai; Ja50c carv rosewood bowls, Polynesia; Je78 figs carvd in needle eye, in hair &c, Armenia

DECORATING. O59 wdcarv, tile pntg, lace, Amalfi; Mr53c coloring tile & kiln, Mex; N53c pntg cloisonné ware, Jap; Ap48c intric lacqerg, Kashmir; Jl67 pntg lacquer bowls, Thai; Mr71 18th c Thai lacquered panel & lacq ware canister, Burma; Mr40c, S24, Mr76 & Ja55 (Sicily), O46c & Jl65(C Rica) decorated cart wheels; Je72 decorated gypsy wagons, Eng

LEATHERCRAFT. F55 & Mr32 leathercr, Mor, handoolg bk bindg; N65 leathercr of Tuareg, Sahara

MISC. Ap71 folk bedroom mural, Hung; Ag36 Imst pageant masks; O74 demon masks, Bhutan; O36 decoratg masks, Guat Inds; S71 & Mr68 decor & makg sheets of tapa (mulberry bark) used as clothing, room dividers, bedding & "red carpets," Tonga; Mr73 Chimu figurines, Peru pre-Colum; D58 & My38c2 Navaho crafts, silver, weav, turquoise; D72 carved figs, ceramics of Mound Bldrs, Fla & elsewhere; My67 world's first etchings, on seashells w pitch & cactus acid by SW Inds

Ja45(2pn), O78, Mr72, Jl59(carver at wk), Ap60, O78, Ag55 & Ag58 NW Ind totem pole carv & headgear; Je72 crafts of Sulawesi(Indon) esp carvgs of the dead; Ap72 & O70 decorated Easter eggs, Ukraine; Mr45c(N It), Je51, Ag33, N27(Liechtenstein), & S23 wayside crucifixes

Ceramics. *(See also INDUS: CERAMICS)* S64 hist revealed in anc glass; N20 world's anc porcelain center, China; S32c porcelain figs, China; D74 14th c Chin pottery figurines; Ag79(f) 14th c glazed stoneware (celadons) of China salv fm Yellow Sea wreck; O78 16-17th c Chin pottery fm Dutch wreck of 1613; Ja69 Ming bowl, white jade sculp, Taiwan; D77 expert potter & studio, Jap; Je78(f) 11th c Muslim glass salv off Tur; My72 anc Minoan pottery, statuettes; F66 pre-Inca Tiahuanacan jar, Boliv; F64 pre-Columb c & stone figs, Peru; Mr67, Mr53c, Mr34c & S40c Mex pottery decorating; O68 mosaics of Aztecs; Mr53c cõl sands pressed

in tile, Mex; D79 Eur glassware, decanters of 1724 Sp wreck in Carib; Je66 pntg pottery, Fr; Ag61(Cornwall) & D60(pn, anc Isr) pottery; S69; Mr61 Waterford glass engravg, Irel; Ap63 Swed blown glass; Ja63 ceramic figurines, Denm; Je79 Ger Stoneware jug of 1620; Je68 engrav on gl at Lobmeyr's, Vienna; My77 & N56 same, Corning NY; F68 same, Czech; Mr65 pottery & tiles, Sp; Je69 earthenware, Rumania; O68(Tenn) & Mr69 (Wis); Ja38(Hung) & F70(Lebanon) potter's wheels; S51 decor pottery anim & birds; ND; N73 china mender, Afg; F65 mosaic pavement, It; Je74 4th c Roman mosaic pavemt & 15th c stained gl, Eng; Ja39 anc mosaics, Istanbul; D69 12th c stained glass, Chartres cathedral; Ja43c & Jl36 st gl ch windows, Bost & NY; N72 Renaiss goblets, Venice; Ap31 prim Basuto pottery, S Afr

Miscellaneous. S58 sand-drying of flowers; D56 Seminole Ind bldg & cooking; Ag65 Amishmen rebuild barn in a day; Ap76 hand-carvd lasts for handmade boots, Tex; Je46c dippg bayberry candles, Cape Cod; My48 pn a Rembrant in sand; My50c pap lanterns, Jap

ASCENSION ISL. My44; O59; Jl27 pt; Ag45 hydroponics

ASIA. *(See also MIDDLE EAST, NEAR EAST)* Jl58 & Ja59 Douglas auto trip, SW A; N32c3 (2c) Medit to Yellow Sea, Je & O31 & Mr32 trans-A auto exped; O40 exped along "old silk rtes" Paris-Delhi; D59c2(2c) Grosvenor world tour, mostly A, & "Yankee" cruise SE A; Mr71-3 SE A, esp Burma & Thai; Ja36c2(26pn) Cent A tribes; D51c pt; Mr49c Far East eclipse expeds; O27 Cent A; Ap54c Navy in Mid East

ASTRONAUTICS. *See SPACE FLIGHT.*

ASTRONOMY.

Space. *See main entry SPACE FLIGHT.*

Universe. My74(drgs, many pns) galaxies, novas; observatories Mt Palomar & Kitt Peak, Ariz; phot of Milky Way, radio telescopes, sun's evolutn; My74(7pn, ports) 7 pioneers in search for universe; hist of modern astron; Ag55(f) huge atlas of u prod by Palomar observ; My59 first col phot of nebulae; Jl43(12 star charts & 13 diagrs); F52; S50; D56 & D57 Nat Geog-Palomar sky survey (observatory wk, galaxies &c); My49c & Jl39 Mt Palomar & its telesc; N65 observatory; Ja25 stars & planets

Solar System. *(See also SPACE FLIGHT.)* Ag70(fdt, 16 pn) brf accts & pns of planets to be visited 1970-88; Jl39c2(10pn); N65(f, 5pn); My74(pns) sun, its evolutn &c; O74 sun seen fm Skylab; coronas; Ja69 map of solar turbulence, measuring ultra-violet radiatn

S73-2(pns, drgs) myst of moon, earth & moon crusts compared, orig & hist of m & interior, explan for landg sites; anal of fragmts &c; what it's like to walk on m (Scott); S73(fdt) Apollo 17 visit of D72(Cernan,Evans, Schmitt) landg in Taurus-Littrow vall; photogr mappg; D72 Apollo 16 fl of Ap72(Duke, Young, Mattingly) pix of m craters; F72 Apollo 15 Jl71 fl to m; m rocks; O66 (fdt,6pn) Surveyor camera on moon; F69-3(feat) phot fm Ranger, Surveyor, Orbiter, astrogeology, craters &c; mapping moon; Jl71 moon surface; Apollo 14; D69 (fdt, pns, 33rpm phonodisc) Apollo II lands on moon Jl69(Armstrong, Aldrin, Collins); planets shown in relatv size & dist fm earth; Mr64(18pn) & N64(fdt; 2pn) moon probe; O62(pns), F59 & F58 (maps) moon, proj flights

Ja53 planets & moon (1st phot w 200 telesc); My63 (4pn) Mariner 2 Venus probe; Je75 Venus observed (F74) fm Mariner 10; F73-2 Mariner 9 fl(6pns,fdt,drgs) photomappg Mars since N71; search for life on M; Ja77 (pns, fdt, drgs) Mars phot by Viking 1 & 2; search for life; Ja77(pn) gigan volc on Mars; D67(5pn) Mars, explor & possible life forms; S55 Mars; F75(3pn, diagrs) Jupiter seen fm Pioneer 10; Je75 Mercury seen fm Mariner 10 (Mr74); F66 giant comet Ikeya-Seki discov; Ja74 (diagrs) & Ag74(fdt,pn)Kohoutek comet seen Ja74

Ja52c Chubb meteor crater, Que; Jl39 same in Ariz Mr63 Kitt Peak solar telesc, Lowell Observ, Flagstaff, Ariz; D66 Smithsonian Astrophys Observ, Camb; Je67 No western U's Lindheimer Astron Resrch Cent, Evanston; S63 giant radio telesc, Austl; Ja26 meas sun's heat; My68 midnight sun, Finl; Ja53 cosmic rays meas; Ap67(4pn) anc Grk clock tower & calend; D75 Maya calendar; O50 geom lines found in Peru desert made by pre-Inca Inds (as calendar?); Ja77 cairns used by Plains Inds as observatories(?) 1M yrs ago

Eclipses. N63(pns) solar eclipse fm jet; Ag70 solar e Mr 7 1970, Nat Geog Exped to S Mex; F37c2 Russia; S47c Brazil; S37-2 Canton isl; Je38c same, corona; N32-2 air phot; Mr49c E Asia expeds; Ja25(drg) how eclipses occur

Aurora Borealis. N47c(8pn); N65; D79; Ap69, Jl68, My39

Meteor Crater. Ja52c Chubb crater, Que; Je51, Je40, Jl39 Ariz

AUDUBON, JOHN JAMES. F77(pns, old pr) biog w many reprods of his pns

AUSTRALIA. S63c2 & one on animals & aborigines; F56; D35c2 cities; D36c2 country & wildlife; D16 (entire) resources, wildlife, World War I; N68 Queensland; N67 New South Wales; F79 Sydney; Mr43c Sydney at war; F71 Victoria state; N56 Melbourne (brf); Ap70 So Austl; O76(f) Coober Pedy, S.A., world's richest opal fld; F75 Western A; Jl42 Darwin at war; Ap 42c2 Anzacs (incl N Zeal); F73-3 A's "wild north," Northern Territ (aborig & wildlife, rock pns); F66 "The Alice" in N Territ (Villiers); aborigines, arts & crafts; F79(f) Burke-Wills trans-A exped of 1860; My78 woman's 200 day solo camel trek acr A desert; N79 Simpson des ecology; F79(f) kangaroos; S63; O44 wildlife; Mr16 W A natives & wildlife; Je73-3, Ja57 & S30 Barrier Reef; S32 shark fishing ind; D56 Tasmania

Aborigines. D49c, S49, Mr48 Arnhem land; Mr56c Melville isl; Ja46c Cent A; Ja53 Groote Eylandt

History. S71(by Villiers) Capt. Cook's explorations of Austl & New Zealand; natives & hist etchgs

AUSTRIA. F59 esp Vienna, Croatia; Je51c; Ap38c2 rural, mts; Je68 Vienna; D45 pt Vienna; Jl65 Danube; D51c pt; Jl45; Jl61 & Mr32c2 Tyrol; Ag60(pic map) & Ap37c2 Salzkammergut; Je62 Vienna & farming, pt A; Ja23 Vienna postwar; D29c2 Danube & Alp villages; Ap15 lt mt fronts; O32c Styria; Ag36 Imst maskers

AUTOMOBILES. *See INDUSTRY: MANUFAC*

TURES; TRANSPORTATION: AUTOMOBILES.

AVIATION. *(See also HISTORY, MODERN; INDUS: AVIATION; PHOTOGRAPHY, AERIAL; PHYS. GEOG: ATMOSPHERE (Stratosph); SPACE FLIGHT; and U.S. ARMED FORCES)*

Heavier Than Air. Je78 hist air & space craft exhibs (Natnl A & S Mus); S79 Oshkosh air show events; D53c3(2c) 50th anniv; Ag57 50 yrs of milit flight; Ag61 50 yrs naval aviatn; My33(68il) milit aviatn; S65-2(fdt) mod survey & hist of US AF(1 by Gen Lemay); O45 new plane types: jets, passeng copters, Hughes wood flyg bt (& under constr) to hold 60 ton tank; rocket launch; Ag77(f, pns, diagr) air-traffic safety meas; O70 WWI aircr fly again; Mr63 nuclear naval aircr carrier Enterprise; S77 Da Vinci's studies of flight, 1400's; My66 copy of early Curtiss plane in flight; My77 replica of Curtiss' June Bug; S69 orig Wright bros plane in mus at Cape Hatteras; Ag59 McCurdy flight 1909; My33-2 incl duot, surveys of milit & civil flyg; US seen fm air; F46c air power; S46 wind tunnl & other experimts; My56 Civil Air Patrol; Ap59 copters; N62 same in Viet; S50c jets & F48 jets & copters; S62(pns) X-15 half plane half missile; Jl69 pilotless planes blt, Cal; Jl49 US air routes; D40(f) aviatn for commerce & defense; Wright's first flight; Ag55 av medicine; Ap69 busy seaplane base near Anchorage, Alas (mostly private planes); Ja78 (pns) pedal-drivn Gossamer Condor; N79 Gossamer Albatross pedaled first acr Channel

Gliders. Ja67(5pn) genl survey US; Jl38, Je29; Mr78 (fdt) 1M mi world record flight, Pa-Tn; Jl61 over Innsbruck vall; My41c Harris Hill, NY; D33, Ag44 Wright's 1911 g; Ag56 Bell's experims w planes & kites; Ag69 sailplane, Rockies; F72 "hang-glider" meet, Newport Beach, Cal; Jl79 hang-gs over G Gate cliffs; Ag44 use in WWII invasion; Ap77(f) kites, Jap

Lighter Than Air. D78(diagrs, map) Doub Eagle 2 6-day 1st balloon xing Atl(8/78); Ag44 barrage bs in factory; F77(f, pns) Yost record balloon flight of 2740 mi over Atl; Jl59 balloon fl Barbados Canaries; Ja63 reenactment of 1910 Swiss balloon flight; My19 helium for balloons; My32 Akron, world's lgst dirig; Je30 Eckener around world; Ag27 Nobile over N Pole; Ja25 Shenandoah over US - all dirigible flights; Jl24 x-sec & end diags of Shenan; My31 huge dirig hangar, Ill; Mr66 racing hot air balloons; Montgolfier ascent, 1783; Ag61 Navy's blimps, hist

Air Travel. *(See also CITIES:AERIAL VIEWS & TRANSPORTATION)* Mr21 first aerial voyage Lon-Austl; My22 Alas air exped & world views from air; Ag22 Arct as air rte of future, Stefansson; Jl24(80 il of US fm air) McReady nonstop across US & rev of av progress; My33-3(68il) rev of milit & civ a in US, many air views; S28 by seaplane to 6 continents; Je32 & Je30 (Eckener) around world; D36 Philippine Clipper on 2d airmail fl acr Pacif; Ap32 air trav, av's Arc-Equat; Ja31, Mr30 (air mail), O27 all many air views Latin America; My31 over S Andes, Ja & My28 Lindbergh over N & S America; S34 L around N Atl; S32 Earhart 1st woman to fly acr Atl solo(5/32); N25 & Ag30 Byrd over Arc & Antarc; S27 Byrd-Acosta transatl; Mr64 first flight across all Ant; Ag64 parachuting into Peru's lost world; Ag33 over Everest *(See also CITIES: AERIAL VIEWS)*

Altitude. D60 parachute fall 18½ mi; F57 Strato-Lab balloon up 14-1/3 mi; S46 stratosph & ionosph; Ja & My36 balloon 14 mi up in stratosph; D26 8 mi up in plane

AZORES. F76; Ja35c3(2c)

AZTECS. *See MEXICO ARCHAEOLOGY.*

BAHAMAS. *See WEST INDIES.*

BAHRAIN. *(Indep. 1971)* S79(map of Pers gulf oil srces) hub of P Gulf; F46c port of pearls & petroleum

BALEARIC ISL. *See SPAIN.*

BANGLADESH. *(Estab. 1972)* S72; Jl75(f) starvatn in B, feedg the masses; F73 peaceful Mru tribe

BECKET, THOMAS à Mr76 martyrdom at Canterbury Cath

BELGIUM. Je58; Mr79 B div betw Flemings & Walloons; My48c, Ap38c2; N29c, My25; Ag44 pt (brf); My55 Bruges; O55 canal barges to Antwerp

BELIZE. *(Formerly British Honduras)* Ja72

BELL, ALEXANDER G. Mr47(f) biog & many interest; phone, early Bell TV lab; Mr75 & Ag56c(f) Bell Museum, Baddeck, NS; his inventions; Mr22; Ap57; O63; O66b; S65 at Sable Isl, N.S. *(See also INDUS: COMMUNIC.)*

BERMUDA. *See WEST INDIES.*

BHUTAN. N76(pic map); S61; D52c; O74 coronatn of new king; arts &c.

BIOGRAPHY *(COLLECTIVE). See U.S. HISTORY.*

BIOLOGY. *(See also AGRICULTURE; BIRDS; MAMMALS; PLANTS; SCIENCE)* S76-3(6pns, fdts) new biol; DNA struc, clones, orig of life, biogs of 7 pioneers in heredity; Ja77(f; fdt, pns) orig of life appl to Mars; D67(pns) possible life on Mars; F61(2pn; Zahl phot) sun gives life to sea; Jl71 bioluminescence in many forms of life; also O65(mushrms), Jl62(fireflies), & O59 (all 4 Zahl phots); My27c(2pn) fam tree of flowers; Je73 measurg forest growth; Ap74 scientif productn of trees; F69 monkey emotns controlld by electric impulses; Jl75 embryo transplants in cattle; plant pathologists breedg new strains of corn, Mex; F77(f) & O45 scanng electron microsc(SEM) photogrs life forms

BIRDS.

U.S. My14(64pn); Je51c; Jl43c; Je45c; Je44c; My54c high-speed phot; Jl56 bird "anting"(good phot of jay, robin, oriole &c); Ap62 Cornell Ornithol Lab (Sapsucker Woods) recording, observ, photo, feeding of nestlings; Je39c2; Je42c; Je48c; F77(f) Audubon's life & pns; N54c Audubon Soc activities; Ag79(fdt; flyway maps, spec map suppl studies of b migratn; Je37 recording calls; Ja28 banding. *(See also WILDLIFE)*

Tropical. Ag56(13pn) Cent Afr, mostly b; O25(4pn) parakeets, fruit pigeons &c, Polynesia; Ja53c at NY distrib center; Ap53c & O55 New Guinea; F61 New Brit; My78 Hawaii; Ap67 Galapagos isl; F45(pns) Tabasco & Veracruz

Northern. S46c Hud Bay b; Je48c Labrador; Mr72 Alas tundra *(See also WILDLIFE)*

Temperate. Mr58 Spain's Marismas, mostly water

b, shrike & 3 vults(Peterson phot); F73 bs of N Austl; Ap62 N Zeal kea, kakapo, blue-winged kingfisher, kiwi, rifleman, yellowhead, gannet; S73 bs of SW desert, Harris's hawk, Gila woodpecker, roadrunner

BIRDS, CLASSIFIED BY TYPES. *(In this entry the figure hyphenated after the date, as N65-9c, indicates the number of pictures of the bird, not the number of articles, as elsewhere.)*

Water Birds. Ag37c2(101pn) shore b, cranes, rails; Mr34c2(23pn) lake & shore b; O32c2(24pn) ibises, herons, flamingos; O67 b of Everglades, anhingas, coot, grebe, egrets, herons &c; O32(pn), Ja74-9c(f) green heron; Ap62-6c same catchg & gulpg goldfish; My70-3c & D70 western grebe in oil slick; Je72 bs of E coastal creeks; N54c water b (& Audub Soc); My70 (Truslow phot) whoopg crane, egret, sandpiper, skimmer, gannets, bittern, grebe &c; My70-3c, My54c spotted sandpiper; D73(f), Ag77, Je44c sandhill crane; F64 (feat) wood ibis; D67(feat) scarlet (fm S Am) mate w white ibis, Fla; My50c(f) scar ibis; F64(f), O67, F65, Ja58b wood ibis; D48c(f) bristle-thighed curlew esp, goose, crane &c; My79-9c, N59(f), F77(clo flyg), My70 whooping cranes, Ja58-6c(f) & O67-3c limpkin, Fla; Mr52(f) redisc of takahe, "extinct" giant rail of N A; My56 water b of Camargue, Fr, & Mr58 of Span Marismas (heron, stilt &c); My70 anhinga; S60 Afr kingfisher, cranes, flamingo, ostrich; Ag54(f) (Peterson), Mr58 (P), Mr57, N71 cattle egret; Je62-16c(f), Mr58 Eur white storks(Peterson phot); Ag60-9c(f) blacknecked stilt; O32(pn), F70(pn), My51c(f) & O57(f) Bahamas, D63(f) alkali deposits on legs, N62, S60, My69, My59 flamingo; F70 feat) & F69(fdt) vast flock flamingo, Kenya; O73(f) flam flock eaten by hyenas; Je73 greater flam flock, S Fr; Jl61-9c(f) James's & Andean flam, Andean avocet; F62(feat), N49c(feat), N54c & My70 roseate spoonbill; Jl66 spoonbill, snowy egret; N43c (f), Je20(co-f), N54c pelicans; Ja75-17c(f), Mr34(pn), Ja49(pn) O72, O70, O67, F51c, Je44 brown pelican; Ag67 & Ap75 white pelican, Gt Salt Lake; F51c gulls, terns, pelicans

Je25(f) black-headed gulls in Lond; Ag73 herring gull banded, Can geese; Ag73(f) comm & roseate tern; F47(f), Ja57b, My78 clo & Ja57b sooty tern; S71-8c(f), D46(f) & My78 fairy tern; Jl25 albatross, booby, tropic-b &c; Je64(feat) gooney b on Midway; S41c2 tropic-b; Jl71 cahow(Bermuda petrel), tropic-b; S71 cormorant, water-diving darter or snakeb(under water); Mr59 cormorants (guanays), Inca tern, booby, Peru; Ap67-5c, My78, My59, F47, S41c blue-faced booby; Je20 & S24 guanay, Peru; N59 masked booby; My67 gannets; F47 & D46 terns, S71 (feat) white or love tern

Ag38c3(30pn) ocean b; Ja36c2(34pn) b of N seas, auks, &c; F51c sea b, Lower Calif; Ap67 Galapagos sea b, penguin, gulls, 3 boobies, cormorants, frigate-b, blue heron, albatross &c; Ja55-6c great albatross (of Anc Mariner); Je64-14c(f) black-footed albatross; Mr56 penguins & sea b of Falkland isl; N71 Dominican gull, blue-eyed shag; Je48c murres, gannets, eiders; S54c(f, Wales isl), Jl67(Scilly isl), N53 (clo Zahl), O52, & My47 puffins &c; Jl67 kittiwakes, puffin; N30 gannets, puffins &c, Faeroe isl; Ja55b(f) S Ga isl, My59 Galap, N71, Mr73 rescuing jackass or Cape peng fm oil spills, S Afr; F32(f), N71, O68, Je67 Adelie peng; Mr56-3c, N71, Ja55, S52 gentoo peng F63, S52 & F32 penguins; N71 gentoo & Adelie penguins

Game & Domestic Fowl. Ag15c(72pn by Fuertes); O36c2(60pn) game b; O34c2(93pn) wild geese, ducks & swans; O51c (Allen phot) ducks, geese, swan; Mr51 Long Isl ducks; O51-3c, Ap62 mallard duck; D70 chick w eggshells weaknd by DDT; D57(f;pn) dyeing & bandg, Ap62, Jl43c Can goose; Ag73, F72, Je67, O51 same, flocks flyg; D73(f) snow goose; O51 air view of entire pop of Atl snow g; N65-11c(f) & Ap71 nene goose of Hawaii; Jl75(f) whistlg swan, bandg & chartg migr; O59-9b(f) mute swans, Eng; Jl60(f) trumpeter swan; D78 same, Yell Pk, wint

Mr30c2(16pn) turkeys, ducks, geese, peacock; Je51, Ap62, Jl43-3c ruffed grouse; Ag15p, O36p, My57, Ap70 & Je37 all wild turkey; Ap57(2pn) peacock; Ap27c2(29pn) world's chickens; S48c(f;pn) Araucana chicken; D70-12c(f), N53c Onagadori chicken, Jap, 30 ft tail; Ja26c2(12pn) pigeons; Ap47(f) carrier pigeon, milit & oth uses; Ja26(pn) same; S49(f) & Ag68 nettg wood pigeons, Basque land; Ap69 goura, largest pigeon, New Guin; O25(2pn), F61 clo, fruit pigeons, S seas; S62-11c(f), My50c hoatzin, Guyana; Mr52 takahe (notornis), primit Ige moorhen, thought extinct, rediscov N.Z.

Birds of Prey. Jl33c2(48pn) eagles, hawks, vultures; D20(pn) value of Amer bs of prey; Jl37, My70(Truslow) eagle, owl, condor; Ja61-23c(f), F78-15c, My29(f), My14(pn), Jl33(pn), Jl50(pn), Je75, My70, O67, Jl66, Je63, N62, Ja56 all bald eagle; O69(f) black e; S67(f; Mont), My40(f;Wyo) & F54(Scot) golden e; D20c(6pn Fuertes) hawks, falconry; F42(Ind), N73 (Afg), S79 (Bahrain) & My69 (Kuwait) falconry; Mr74-9c(f) Cooper's hawk; embryo, chicks in n, feedg, strikg; D20p, Jl33p, Je48c, Jl46c; My35(f), Jl37 prairie falcon; Jl69(f), Ag32(f), F51c, S47, & Je45 osprey

F35c2(21pn) owls & Ap45c western owls; Ja70, Ap45c, Jl43c, Ja56(bandg) gt horned owl; My64 snowy owl; Ap62-5c, My40, F35 barn owl; My70-4c, O67 barred owl

My71-18c(f) condor vulture, Colomb; F77p, My70-2c Cal condor; My68-14c(f) Egyp vult; Mr58 kite & 3 diff vults, Sp; O72-8c(f) swallow-tailed kite, Ev'glades; S71 yellow-billed kite; My68(f) Egyp vult throws stones to break ostrich eggs; Ja63 Afr vult

Land Birds (Perching; Song). F50c(16pn) b of paradise; Ap53c & O55 & Ja63 many var(Gilliard phot); S58-6c(f) greater b of para; Ap17c(32pn Fuertes) warblers; D38c2(51pn) canaries & other cage b; Ap35c2(55pn) tanagers & finches; Ja53c tanagers, finches &c; My54c, Je48c, Je39c scar tanager; Ap62, My54c, Je48c, Je42-2c cardinal; Ja58c prothonotary warbler, Fla; Ag79 & S46 blackpoll warbs; Ap67 Galapagos finches, warblers, fly-catchers &c; Je36c2(many pns) flycatchers; Ap68 Amer goldfinch; Ap62, My54c, S46c yell warbler; Ap62, Je42c bobolink

Ap36c2(42pn) thrushes, thrashers, swallows; Jl56-3c, Je48-4c clo, Je72, Je39c robin; Je77-12c incl birdhse plans, Ap62-6c feedg seq, Ap54-16c hi-sp flight study, bluebird; My54c, Je42c, Je39c wood thrush; Jl43c, Je48 barn swallow; Ap67 woodpecker-finch pries w pick; Ap54c2(4pn) bluebirds & honey-guides;

Mr39c(43pn) sparrows, towhees, longspurs; My34c2 (33pn) wrens, nuthatches, chickadees &c; Je48c, Je45c, clo, chickadee; O45c(8pn) fairy wrens, Austl; D77-15c(f) satin bowerb, Austl; D61 bower-b, Austl; Je55-9c(f) lyrebird, Austl; F62-8c(f) courtship, Ja53c 2clo cock-of-the-rocks

Jl34c2(48pn) blackb & orioles; Ja33c2(17pn) crows, magpies, jays; Ap20 crow(of every land); Jl56-2c, Je51 starling; Ja50c(pn) yellow-billed blue magpies; spiny babbler(rediscov); Je42c, Je39c & F77 red-wing blackb; F56(f) spotted-breasted oriole, Fla; Je51, Jl43, Je39c cedar waxwing; Je51c parasitic activities, Jl43c clo cowbird

Land Birds (Others). Ap33c2(25pn) woodpeckers; D66-6c(f), Ap62, Je45c pileated woodpecker moving eggs to new nest; My70-3c yellow-shafted flicker; Je36c2(36pn) parrots, kingfishers, flycatchers; D64 parakeets; D69-14c(f) hornbill nestg habits phot thru glass in cutaway hollow tree; S74-9c(f) Eur kingfisher; N62 woodland kingfisher, red-&-black-billed; F66 rose-breasted cockatoos (galahs), Austl; O56-9c(f, Zahl) & N68 Austl lorikeets

Jl32c2(35pn) hummingb, swifts, goatsuckers; Ja63 c2 & N60 (Greenewalt phot) Ag51c & Ag47c(Edgerton phot) hummingb, all high-speed phot; Jl66-4c(f) "marvelous hummingb" rediscov & phot in flight; Ag47(f), Je28(f), Ja63, Ap62, N60-2c ruby-throated h'bird; Ag51-3c, N60 rufous h'bird; F53(f) Nuttall's poorwill, clo of hibernatn; F74 (port), My14p, Je36p, S73, Ja68 & Ap64 roadrunner; O67 forest cuckoo, Madag; N62 lilac-breasted roller; F65-6c(f) & My40 (mus set) Peruvian oilbird, "guacharos"; S24(f) & Je20 (f), Mr59-4c guanay; Ja69-8c(f) quetzal, Guatemala

Flightless Birds. N62-4c & S60-2c, F65, Ag53-2c, Ag42(ridg on farm) ostrich; S55b(f), Ap62, Ap52 N.Z. kiwi; Mr52 takahe rediscov, NZ; Ja78 weka, NZ; Ja56 dodo(extinct) *(See also subh WATER BIRDS: penguins)*

BIRDS, EXTINCT. *(See also DINOSAURS; MAMMALS, EXTINCT. Some extinct & threatened species included in BIRDS, SPECIAL above)* O67(f; pn) Aepyornis maximus, giant ext ostrich-type b; Je50 dodo as pntd fm life 1628; Ja56bw skel & reconstr specimen of dodo; Ag14p, O36p & F77p(by Audubon) all pns of passenger pigeon; N62c & O36 mus specimens of same

BOLIVIA. F66, O50c, Mr43c, F27c2, N34 fiestas; S64 (brf), F71 Lake Titicaca (feat)

BORNEO. *See PACIFIC ISL and MALAYSIA.*

BOTANY. *See AGRICULTURE; INDUS; FLOWERS; PLANTS*

BRAZIL. S62; Ja44c2; D30; O42 air cruise; O48c mining regions; F78 3 coffee states: Rio de J, Sao Paolo, Parana; Mr55 Rio & S39c2 Rio & carnival; My60 Brasilia; My39 Sao Paolo; N72 Sertao or Drought Polygon of B's NE bulge; life in huge arid region; N77 (f) reclaimg B's jungle lands; O72 Amazon, geog of riv & its life; N38c2 Amaz delta & F49 Amaz; Ap26 Amaz by hydroplane; S68 Xingu Nat Pk to save stone-age Ind tribes (esp Tchikao); S71 same for Cinta Largas tribe in Mato Grosso; O43 pt, Mato Grosso & Parag border; My64, N52, N33, N30 jungles, r, mts; My59 giant Amaz insects. *(See also INDIANS, SO. AMER.)*

BRIDGES & TUNNELS. Mr36 bs of world; D41 superhwys incl G Wash b, Triborough, &c

Historical. O38 Rome's oldest b, 62BC, Fabricio b; S35c Roman b, Verona; D62(2p pn) wooden drawb, 3d c Roman London; O36 Moorish b on Rom found, Cordoba, Sp; Ag31 Toledo stone b blt 18th c, Sp; Je63 mediev stone b, It Riv; Je57(2p), N74, Mr4C, S36 Ponte Vecchio, Flo; N28 B of Sighs, Ven; O56 Kapellbrucke, Luzern; My68(fdt) Pont Neuf, Paris of 1604; Ap33 first iron b, Eng 1779; N65 Eads b, St Louis, 1874

Modern. Je51c Golden Gate; F39, Ap47 & Mr36 (constr) G Gate b; N69 G G; Je54c & Ag56 San Fr Oakland Bay b, world's longest 8¼ mi; Jl32 highest susp b in world, Col; Ag32 Ambass b, Detroit; F68 Verrazano Narrows b & hwy, NY; Mr51c Bronx-Whitestone b & Manhatt b, Bklyn Navy Yd; Je51c Bklyn b; D41 Tribor & G Wash bs, NY; Ap64 & S64 Chesa Bay b-tunnel; pic map, diagrs, constr details; Jl52 b(once a canal) acr Del r, Del Mem b, Wilmington area; Ja53c Arlington Mem b, DC

F27 b carries Chesa & Ohio canal over Monocacy r; Jl45c bs & tun, Harpers Ferry, Md; Ag62 cov b, Mass; My51c & Ap43c(NH), Jl49c(Va) same

F39 Tower b, Lond; Ap67 cov b, Upper Rhine; Jl45c (av) Remagen b & army pont b, Rhine; Mr45 "Bailey b" of US Army, It; O65 longest susp b in Eur over Tagus r, Lisbon; steel b over Douro at Porto, both Portug

D73 braided straw b, Peru; F66 susp b, Boliv, castle-like buttresses

Oriental. O37 650 yr old Marco Polo b, Peiping, China; Ag48 Asian cane bs; N76 bamb b, Bhutan; N75 & O53c cable ft b, Hunza r; N71 wooden slat ft b, Nepal; Ag46 cable b lined w yak hides, Tibet; Je44 chain susp b, Tib; Ja68 b of boats, Indus r, Pakis; O43 cable b for horses, Burma; Jl67 b over r Kwai, Thai; Ap68 woven bamb & barbd wire ft b, Viet; Ap53c & N51c vine & bamb b, N Guin; N55 same, Nepal; D37 chain bs, China; F36 17-arch marb b, Summer Pal, Peking; Ja69 susp plank ft b, Taiwan

Je35 bamboo & creepers b, Guinea

Tunnels. Mr51c Bklyn-Battery t, NY; Ag64 2-mi t for bts on Canal de Bourgogne; S65 x-sec of Mt Blanc t; Je60(pn) Mt Blanc t; N77 Belgrade-Bar rrd b & t, Yugo; N69 doub barreld prefab tube laid acr San Fr Bay in sects; F68 hwy t, Wyo; Jl68 narr gauge rr w mt t, Yukon r

BRITISH COMMONWEALTH. Mr16 by Taft; Ap43

BRITISH GUIANA. *See GUYANA.*

BULGARIA. Ag32c3(2c); Jl65 Danube delta; O40 pt; Ap15

BURMA. F63; O31c2; Mr22-2 & Ag30c2 Shan hill tribes; teak forests; leprosy-curg tree; Mr71 pt B; Je74 B's tegrowers & floatg farms, Lake Inle; Je79(x-ray) Padaung women stretch necks w brass rings; O43, N40 B rd; Mr71(fdt) & O31(f) Pagan temple region

BUSINESS. *See INDUSTRY: COMMERCE.*

BYRD, RICHARD E. Ap62 biog & memorial; Jl57 last art by B & obit; O47c(f;by B); O35(72il) by B on Antarc explor; Jl35(brf); Ag30-2(by B) conq of Antarc by air; S25 & N26 flights over Arc & 1st over N Pole

CAMBODIA. *See INDOCHINA.*

CAMEROON. *(German 1884-1916; French 1916-60)* F31; F47 native village life; Ag59(14pn) native types; Ag66 Rey Bouba's feudal army. Jl74 return of stoln sacred image

CANADA. D61; N41 war effort; O26 fm air; Mr59 St Lawrence Seaway; Je59 C's queen

Eastern Canada.

ONTARIO. D78; Jl63; D53c; Ag32; N47c Ottawa; Ag75 Toronto; S63 Quetico Prov Pk & proposed Voyageurs Nat Pk; N Minn

QUEBEC. Ap77(f) Q & Fr Canadians; O49c rural; My39c2 Saguenay; Jl70 St Lawr, Gaspe & Cape Breton Isl; Ag35c2 Gaspe; Mr71(feat); Ap30c2 Q City & F35 "old France"; Ja58 Q City, winter & carniv; My67 & S50c St Lawr & Mr59 Seaway; Ja42 Anticosti isl; My67 (2fdts) Montreal & Expo 67; churches, restnts &c; Ja52 c Chubb meteor crater

NEWFOUNDLAND. Ja74; Je49c; Jl41; My52c Grand Banks cod fishing; S67 & D41 St Pierre & Miquelon; Jl29 sealing; N64 Vikings on N; Jl51c Labrador canoe trip

NEW BRUNSWICK. My41; Ap75 Loyalist settlers

NOVA SCOTIA. Mr75; Je64; My40c2; Ag57; Jl20 Cape Breton isl & A G Bell; S65 Sable isl & Bell family; Ap75 Loyalist settlers

Western Canada.

O70 prairie provinces: Alta, Sask, & Manit; Ag55 & Ag31 Mackenzie's trail; S66; Je47c; My34 duot; O41 Rockies; Je73(f) hikg in Rockies; Ap25 Columbia icefield; O76(f, fdt) Canada's "now frontier"; NW Terr & Yukon; Jl68(feat) NW C, B C., Yukon, NW Territ, Dist of Mackenzie &c

ALBERTA. Jl60 esp products; O70(pt Alta); Ap64 natl pks; Je47c

BRITISH COLUMBIA. Mr72 coast life, shippg, Indians &c; Ag58; O78 Vancouver; Ap38 Tweedsmuir Pk; S56 Kitimat alum mines

MANITOBA. O70(pt)

SASKATCHEWAN. My79(old phots) early settlers, relig communities; O70(pt)

YUKON. Ap78; My42c & Je36-2; Jl30(f) Y Trail of 1898; Jl65 Mt Kennedy (Mt St Elias region) climbed by R. Kennedy (2d Natl Geog exped under Brad. Washburn; see Je36); D75(f) raftg down Yukon r; Ag57 Yukon r canoe trip; S53c Y Trail retracg rte of Gold Rush of '98

DIST. OF MACKENZIE. Jl68 pt; Ag31; My64 Esk life, Banks isl, Polar Sea

NORTHWEST TERRITORIES. Mr74(f) trek acr N Can by Esk dogsleds; F71 (Baffin Isl) & N77(Inuit) Esk life; Ag73 divg under Arctic ice; testg equipmt & phot undersea life near N Magnetic Pole

CANALS. *(See also countries, such as China, France, Netherlands, Panama, and TRANSPORTATION)* Ag62 Cape Cod c; Jl47; S46(lock) & N33 Erie c; Jl70 Champlain c, NY; Mr59c(f, drg) Eisenhower Locks & St Lawr Seaway; Ap63 & Ag73(fm air) & Ag32(locks) Welland c; D61 hydr lift locks, Peterborough, Ont; D53c Rideau c locks, Ont; Je64 St Peter's c, N S.; Jl63 Sault Ste Marie Locks & Soo c; Ap48(Brandon Rd) lock on Miss, Joliet, Ill; My31 Hennepin-Rock Isl c, Ill; Mr60 C & O c; F27 same bridges Monocacy r; Ag71 Tulsa-Miss r c, Ark r c & infrared air phot; Mr68 prop Tenn-Tombigbee Waterway to Mobile bay; F78(f) Gulf Intracoastal Waterway, S Tx-N Fla; F34 Celilo c, Columb r, Or

Mr(fdt) & O70 air views Panama c; F78(f,diagr, map of treaty lines) Panama c treaties; My30 first trip thru Pan c; S64 Mex drainage & irrig c; Mr68 & Je77 (lock) Caledonian c cuts Scotl in half

Jl74(f) explor Eng cs; Ag40c(f) cs of Eng; c over hwy; *see esp FRANCE: EASTERN & SW;* S54c & D50c Neth; D61 Berlin; N50c Scand; Jl35 lock on Danube; Je70 Grand C, Ven; D56, D49c, Mr44, Je39, D30 Corinth c, Gr

Mr77(reopened), Ja57b, N35 & Ja52 Suez

F77 Rajasthan huge irrig c, Ind; Je61 Thailand; Jl67 Bangkok; D68 rice barges on Cho Gaoc, Viet; Mr71 Viet c; O61 spoke-like drain & irrig cs, S Viet; Ap37(f) Grand C, China

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CARMICHAEL, LEONARD C. D73 tribute

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CASTLES, FORTS, PALACES. *See subh of ARCHIT.*

CASTRO, FIDEL. Ja77 C's progrms in Cuba today

CENTRAL AFRICAN REPUB. Ag66(brf)

CENTRAL AMERICA. Ja31; Mr30; O27 all many aerial photos

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CEYLON. *See SRI LANKA.*

CHAD. Ag66 Lake & village compounds

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Ottawa D53c, N47 esp Parliam area
Palermo, Sic. Mr76, S24
Panama City N41, My28
Paris Jl72(2, 1 fdt), My68 Iles, D46, Ja45 Left Bank, O36, Mr25 (var)
Pearl Harbor, Hawaii My54, N49
Perth, Austl. D35
Philadelphia Je78, D32 many, 1 fm 20,000 ft
Phnom Penh D68 (3p fdt)
Pittsburgh Je78, Mr65, Ja32
Pointe-a-Pitre, Guadel. O66

Ponta Delgada, Azores. F76
Port au Prince, Haiti S44, Ja31
Port Angeles, Wash. Ap60
Port Chalmers, N.Z. Ap52
Port Louis, Mauritius Jl39
Port of Spain, Trinidad N40
Port Said Je75
Portland, Me. Je77
Portland, Ore. Je72, D46, F34
Pretoria N62
Providence S68
Provincetown, Mass. Ag62
Quebec Mr71 + citadel, My67 esp Chateau Frontenac, O49 Citadel & Chateau
Quito F68 dusk, also Guayaquil, Ecuador's largest city, surr by mangrove forest; D41
Rabaul, New Brit. S43 w Jap warships
Recife, Braz. S62, D32
Regina, Sask. My79
Reykjavik, Icel. Ag69
Rheinau, Ger. Ap32
Rio de Janeiro F78 eve, O69 dusk, S62, Mr55, O42 hi-alt infrared, S39c sevrl views, D30, S28, O27
Rome Je70 Vatican, N46 mod pt w Vat, Ag27
Romont, Switz. Ap32
Rotterdam Mr25 Meuse r, F40 R & Rhine
Rouen, Fr. O42
Ruby, Alas. Jl30 on Yukon trail
Saigon Je65
St. John, N.B. My41
St. John's, Antigua N40
St. John's, Newf. D61
St. Malo, Fr. Ap65, S27
St. Mary's, Md. Ap41
St. Moritz, Switz. Ap32
St. Nazaire, Fr. Ag43 U-bt base
St. Paul, Minn. Ja28
Salmon, Id. Jl36
Salt Lake City Ap75
San Antonio D47
San Cristobal, Arg. My31
San Diego Jl69, Ja42, N34, Jl24
San Francisco N69, Ag56b fm high, c skyline, F54 G Gate, Je51c, My49(2p), Mr43 pt, D36, Ap32, many views, Ja28
San Gimignano, It. N74
San Jose, C.Rica Jl65
San Juan, P.R. D62
San Salvador N44
Santiago, Chile O73, O44
Santo Domingo O77, Ja31
Santos, Braz. My39
Sao Paolo, Braz. S62, D30, F78 ultra-wide lens
Sarajevo, Yugo. S30
Schenectady, N.Y. N33
Seattle Ja77
Segovia, Sp. Mr65
Seoul, Korea D79, Mr69
Sevastopol Ap45
Seville, Sp. Je75
Shreveport, La. Jl49
Singapore Ag66 fisheye lens, N41
Sisteron, Fr. My75
Sitka, Alas. O40
Soweto, S Afr. *See Johannesburg*
Spokane, Wash. N52
Stavanger, Nor. Ag48
Stockholm Ja76, S34
Stockton, Cal. D35
Strasbourg Mr25
Stuttgart, Ark. Mr78(2p)
Sukkertoppen, Gr'land S75
Sun City, Ariz. Jl76
Sydney, Austl. F79 3 views, S71, N67, S63, Ap41
Taipei, Taiwan Ja69
Takao, Taiwan Ja45(2p)
Tampa Ja30
Tarim, S. Yemen O32
Tehran N53
Tel Aviv, Isr. O46
Tell City, In. F50
Timbuktu, Mali. Ag75
Tirnovo, Bulg. Ag32
Tokyo D60, O64, Ap45, Ap44
Toronto Ag75, D53c, Ag32
Torre del Greco, It. F46
Toulouse, Fr. Mr25
Tripoli, Libya S65
Trujillo, Peru Ja33
Tucson Mr63
Tunis Ja43, Mr37 pt
Ulan Bator, Outer Mongolia Mr62
Valencia, Sp. Mr25
Valparaiso, Chile F60
Vancouver Mr72, S66
Vatican City, It. Je70, Mr39
Venice N72(2p), Mr25, Ap61 in 1600's (drg), S51 St. Mark's Sq
Vestmannaeyjar, Iceland My77 & Jl73 before volc erup
Vienna Je68, Mr25
Warri, Nigeria Ag75 the port
Warsaw Ap72
Washington, D.C. O76, Ap67, N78 Mall, night, Ja60b before Mall, Mr60 Poto nac edge, Ja57b, Je51, Jl49; Mr42 sevrl; D40 W & airflds on Potom; Jl40; Ap35 sevrl; Jl38 fm 5 m. up; N31 many; Ja53 & Je51 Pentag area; My50 Capitol, Lib of Cong &c, White Hse sec
West Linn, Ore. N42
West Point Jl70, Je40
Wilmington, Del. S35
Winchester, Eng. Ja41
Winnipeg D61
Yakutsk, Sib. Je30
Yokosuka, Jap. D45 naval base
Zurich, Switz. Ap41

City Planning, Renewal, Complexes. *(See also ARCHITECTURE: WALLED TOWNS)* Jl64 NYC skyline, skyscr, view N fm Emp St Bldg, World's Fair, Stat of Lib; Ap65 Citx nf Tomorrow, W Fair; Mr51c Bklyn housf proj, Vandeveer Est; D66 & Ag62 Boston & hist; Mr65 Pittsb de-smoggd; skyline, Civic Arena, Mellon Sq Pk; Ap67 fut of Washington, D.C; D64(pic map) growth of W; pub bldgs & proj Kennedy Cen for Perf Arts &c; Je60 new W mall & museums; Mr15c W hist by W.H. Taft; Ja53c(2p av) Parkfairfax apt cities, Alexandria, Va; D68(pic map) colon Wmsburg

F48 Shawneetown moved 3 mi fm floodg Ohio r; Je67 U of Chic renewal progm; Je79 Renaiss Cen, Detr; Jl76 Minneap Crystal Court; Crown Cen, Kan City; N65 Gateway Arch & oth bigs, St Louis; Mr68 model of Mobile's city plan; Ap64 mod suburb devel in Ariz desert; O77 Ariz City devel fails after 18 yrs; Jl76 Sun City, Ariz, plannd devel for sen cits; Mr79 Ken-Caryl ranch, Col's lgst plannd commun

Ap51 Puerto Rico's c of concr, single fam housg proj; Ja67 & My60 Brasilia; O72 Boa Vista, Braz, plannd to hold 1 mill by 2000

Je39 Eng housg devel(av); Ag64 plan for new city of 100M in Ire; O60 Rotterdam reborn; Europoort; Ja70 Alexanderplatz, E Berlin, model & constr; O65 formal gardens, Lisbon; Mr65 & D38 circ agr town for defense & agr kibbutz town, both Isr; Ja67 Islamabad, Pakis new capital; My70 New Belgrade, Yugo; Ag66 urb ren proj, Dakar, Senegal; same, Singap; F79 Sydney Strand arcade restored, Austl

PRIMITIVE. O72 spoked-wheel vill design of Kraho Inds, Braz; D71 royal Kraal of Zulu chief, 1828; Ag66 vill compds of Chad, vill on stilts, S Dahomey; Ag69 prim vill plan centrd around queen mother & royal cattle, Swaziland

HISTORICAL. D73(2p drg) pre-Columb Inca city of Cuzco *(see also others under ARCHAEOLOGY)*; My64 (contemp prnts) Shakespeare's London, skyline, bridge, oth bldgs

CLEMENS, SAMUEL L. *(MARK TWAIN).* S75(f) life & geog backgrounds; Jl56b(pic map) boyhood home, Hannibal, Mo

COINS. *See NUMISMATICS.*

COLOMBIA. Ag70; My47c incl Magdalena r; O40c2; F26 Bogota; S52c Amaz jungle tribes; Ag48 biolog exped; My66 same

COLUMBUS, CHRISTOPHER. N75(f) C & the new world he found (2pns, fdt, old prints, maps)

COMMAGENE. Mr61 anc throne on Euphrates

COMMUNICATIONS. *See subh of INDUSTRY.*

CONGO. *See ZAIRE.*

CONSERVATION. *(See also ECOLOGY; POLLUTION; U.S. NATIONAL PARKS; WILDLIFE)*

Air & Water. *(See also INDUS POWER for dams & PHYS GEOG RIVERS)* Ag52 earth's water needs; artif rain; Ja78(f) c of Hudson r; Jl77(f) 17 US wild rivs to be preserved (sep arts on 6); Ja76 Owens Vall wat war w L A; O73 waters of Lower Col r; use for power, irrig; treatmt; F39 wat supply fm rain off roofs, Berm; S72 elim of effluent wastes on Ct r fm pulp & pap mill; Ap48c TVA lakes; D77 workg model of Inland Sea to control spread of effluents, Jap; Jl48 Cubuk dam, Tur *(See also AGR METH)*

O76 air & wat poll abatemt, Lake, Md; N76(f) testg atmos poll over St Louis; Mr65b Pittsb desmogged

Land. *(See also AGRIC METHODS; U.S. NATNL PARKS)* N79-2(fdt) deserts, contr of advancg sands; world map of des areas; probm-solvg in US Austl, Afr, Iran; F48 flooded town moves fm Ohio r; Jl68 Mackenzie r village moved 50 mi to avoid floods; N45 Ft Peck reserv & dam, Mo r, Mt; S46 Norfolk dam flood contr, Ark; Je72(fdt pns & drgs) cons of US wetlands (salt marshes); S79 Atchafalaya Basin Floodway vs wildlife conserv, La; My77(f) mangrove swamp preservatn, Fla; D70 proposed jetport stopped, Fla; S77 dikes keep salt wat fm wetlands, Cal; N79 & My66 golf course oasis, Cal; N79 trappg seeds in "ponds", to reclaim des, Austl, coatg sand w oil residue to form mulch, Iran; O77 Ariz land recl by dams, reservoirs, canals, proj to bring wat fm Col r; laser-guided land levelg to prev wat runoff; Je73(drgs) cut-&-fill opern to repl earth gouged by stripming; Jl76 recontourd & plntd land after stripming (bef & aft phot); state takeover of coastal prop, Ore; use of Landsat aer phot in cons

D46 Holland dikes; Ap68 Haringvliet dam, Neth, to cons land (drgs); hist of Neth land recl; '33 draing Zuyder Zee; Ag34 same of Pontine marshes, It; Je45c soil erosn in China; F42 & S19 Chin flood control

Natural Resources. Ap78(fdt map, drillg sites, diagrs) c of oil & gas on Contin Shelf

Waste Recycled. D70(drg) sewage treatmt plant, S Lake Tahoe, Cal; garb & trash recycled, Ger; food fm waste; Je72 sewage disposal; froz hot wat waste spray insulates fruit buds; fert & fish food fm recyc waste, Ore

Wildlife Conservation. *(See also main hdg WILDLIFE and nature hdgs.)*

FORESTS & WILDERNESS AREAS. Mr79-3 U'S natnl w refuges; Ap73 John Muir's Amer: founder of natl pks, Sierra Club; F74 5 US natnl wilderness areas & wildlife *(see U.S. NATL. PKS.)*; N63 state pks of US; S56 US natl forests; Je20 saving redwoods; Ap74 replantg forests for timber; Ap60 plantg seedlg Douglas firs in tree nursery, Wash; Jl68(feat; 2pn) US Forest Serv fights fires, Ore; tree combustn studies; Jl46c forest lookout; O67 forest rangers & fires, Everglades; Mr61 US Forest Serv & smoke jumpers; Ag76 water-bombg wildfire; N52c replanting burned forests, Ore; N77 replacg virgin jung w pine &c, Braz; F72 eleph kills tree by strippg bark

MAMMALS. O76(f) contr of desir & undesir w fm abroad in Fl; O71 threat to w of proposd oil pipe-line, Alas; D76(f) worldwide threat of whaling; Ap79 savg dolph fm tuna nets; Ja76 slaughter of harp seal pups & contr; Jl78 rescug wild burros fm Gr Canyon; Ag52(f) caribou census, Can; Ap66 elk herd & D76 Natnl Elk Refuge, Wyo; F63(f) wolves check moose herd, Mich; S77(f) rescug threatnd giraffes, Afr; F72 bushbuck's paw mangld by trap; threatnd Afr w; My57 Wichita Mts w refuge, bison; Je70 musk-ox domest; Mr79 removg musk-ox by airlift

N71 snow leopard threat, Kashmir; N69 tagging mt lions; S76 fur poachers, Ind; O77(f) survival of wolf; Ag66, S76 fur poachers, Ind; O77(f) survival of wolf; Ag66, Ag60 tagging grizzlies, Ap71 polar bears & Mr79 Alas brown bear; Jl76(f), Ja73(f) bear hibern stud by satellite; My74(f) beavers; My55 use of beav dams; O71 return of sea otter

BIRDS. N54c Audubon Soc; Ap62 Cornell Ornith Lab (Sapsucker Woods), NY; D20 value of Am birds of prey; F78 savg bald eagle; My79(f) preservg whoopg crane; N65 savg nene goose fm extinc, Haw

REPTILES. Ja67 tattoog nos on gators

FISH. Ap78 c of fish on Contin Shelf areas; My65 shrimp studies at U of Miamh & Jap farms; Mr77 fish-farmg, Philipp; Mr72 artif spawng channels for sockeye salmon, B C; My66 salmon helped over dam, Cal; O50c golden trout N H; N52c fish hatchery, Wash; S46 same, Ark; My63 stocking trout by air drop; O76 exotic fish escape fm hatchery, Fla; O72 keepg tuna free of merc poisn

INSECTS. S72 combattg insect pests w biol weapns; S69 war on mosquitoes, N C Outer Banks & Ag69 locusts, Ethiop

COOK, JAMES. S71(by Villiers)(fdt pn of ship Endeavour) explorations of Pacific J27

CORFU. *See GREECE.*

CORSICA. *See FRANCE.*

COSTA RICA. Jl65; O46c; F22

COSTUME. *Many excellent examples under most countries; some more unusual are:* My57 medieval Sp; N32c 15th cent Fr; My57 Jamestown colonists; My50c & O54c colon Charlottesville & Wmsburg, Va; F57 Dinkelsbuhl of 1632, pageant; Ap65 Breton lace coifs &c & Ag50c fem headdress, Switz; Jl51c wooden shoes, Holland, Mich; N78 early 17th c Ger armor for man & horse; Je & D66 & F55 mediev armor, pt

CRETE. *See GREECE.*

CRUCIFIXES, WAYSIDE. *See under ARTS & CRAFTS: PLASTIC, GRAPHIC &c at end.*

CRUSTACEA. *See FISH.*

CUBA. Ja47c; S33; Jl20 esp sug & tobac; Mr61 Guantanamo US naval base

CURRENT HISTORY. *See HISTORY, MODERN.*

CYBERNETICS. N70(feat) the computer revolutn

CYPRUS. Mr73; My52c; Jd46b

CZECHOSLOVAKIA. F68; Ag38c2; F21; F17; Je27c2 rural life & costumes; Ja33-2; JA79(f,fdt) Prague; D45 pt Prague; Jl65 Danube, pt C

DAHOMEY. Ag66 village on stilts

DAMS. *See INDUSTRY: POWER.*

DANCE. *See ARTS & CRAFTS.*

DENMARK. F74; F49c; F32b2 inbl Copenhagen; Ja40c2; Ja63 & F64(LBJ flight) Copen; D55 Svendborg port; F45 Bornholm; D79(old prnts) D of Hans C Andersen; Mr54 man preserved in peat 2000 yrs *(See also GREENLAND & FAEROES)*

DINOSAURS. *(See also BIRDS, EXTINCT; FOSSILS; and MAMMALS, EXTINCT)* Ag78(f,fdt,composite pn; 10pn drags) new theories - warm-blooded? F42c (24pn by C R Knight) life thru ages, crustacea-dinosaurs-mammals; My19(8pn by Knight) all dinosaurs; F63 dinosaurs in Am Mus Nat Hist & Mr65 Carnegie Mus, Pittsb; My54 mountg brontosaur skel; Ap38 iguanodon skel, Belg; Je33 d eggs; Mr54c(f) searchg ds, Col; diplodocus skel; S48 duck-billd d skel in Smithsonian; Ja73(pn; model) reconstr of lystrosaurus, proof of continents driftg apart; Je77(f, pn) & Mr68 Loch Ness monster (plesiosaur?)

DISCOVERY & EXPLORATION. *See EXPLORERS.*

DISNEY, WALTER E. *See INDUSTRY: ENTERTAINMENT.*

DJIBOUTI. *(Formerly Territ. of Afars & Issas; Fr. Somaliland)* O78; S31(f) Somali or Dankali coast

DOGS. *Collective articles indexed below:* Mr19c (entire; 45pn by Fuertes); Ja37c2(36pn) field d; S47c(19pn) bird d; O37c2(31pn) hounds; F36c2(33pn) terriers; D41c2(20pn) & Ag58c (19pn) working & hunting d of world; S44c(9pn) wild & 3 working d; N43c(8pn) non-sporting d; Ap44c2 "toy" d; Ja54c Westminster show; Ja43 wartime uses (last not indexed below)

Separate Breeds *(p = painting(s); bw = black-and-white)*

Affenpinscher. Ap44c
Afghan hound. O37p, Ag58p, Ja54c2, O37p top-knotted A; N59 at show
African, or Cape, hunting dog. S44p
Aguara-guazu (red or maned wolf of Paraguay). S44
Australian kelpie. D41p (Barb) & bw
Basenji. Ag58p, O37bw
Basset. Mr19p, O37p & bw, Ag58p
Beagle. Mr19p, O37p, Ag58p
Bernese mountain dog. S44p, D41bw
Bloodhound. Mr19p, O37p & 2bw(w pups), Ag58p
Borzoi. *See Wolfhound, Russian.*
Bouvier de Flandres. D41p, My75
Boxer. D41p, Ag58p w pups & bw sequence learning manners, Ja54c
Briard. D41p
Bulldog. Mr19p, Ja54c
Bulldog, English. Mr19p, N43p
Bulldog, French. Mr19p, N43p
Cape hunting dog. *See African, or Cape . . .*
Chihuahua. Mr19p, Ap44c & bw, Ja54c
Chow. Mr19p & bw, N43p & bw pups, Ja54c
Coach dog. *See Dalmatian.*
Collie, Border. Ag58bw; Je65 in action, Wales.
Collie, Rough-coated. Mr19p, D41p, Ag58p, Ja54c2
Collie, Smooth. Mr19p, D41p, Ag58p
Coonhound, Black and tan. Ag58p
Corgi, Welsh. D41p (Pembroke & Cardigan); Ap54c
Coyote. Mr19p, S44p & 2bw
Dachshund. Mr19p, Ja37p & Ag58p (both pns of smooth-haired, long-haired & wire-haired)
Dalmatian, or Coach dog. Mr19p, N43p & bw
Deerhound, Scottish. Mr19p, O37p, Ag58p
Dhole. S44p & bw
Dingo. Mr19p, S44p & bw; F75 trapped as pests
Elkhound, Norwegian. Mr19p, D41p
Eskimo dog, Alaskan. Mr19p, D41p *(See also Malemute)*
Eskimo dog, North Greenland. Mr19p, O70 & F65 "huskies in harness"; Mr74
Foxhound, American. Mr19p, O37p & bw, Ag58p
Foxhound, English. Mr19p, O37p, Ag58p
Foxhound, Welsh. O37p
Gazellehound, Persian. Mr19p
Great Dane. Mr19p, D41p & bw, Ag58p (fawn & brindle) & bw, Ja54c, F74 harlequin, Denm
Greyhound. Mr19p, O37p & 2bw, F36bw
Greyhound, Crossbred. O37bw

Greyhound, Italian. Ap44bw
Griffon, Brussels. Mr19p, Ap44c
Griffon, Wire-haired pointing. Ja37p, S47p
Harrier. O37p (English & American)
Huskie, Siberian. D41p & bw (73 dog team pulling 10 ton truck), Ag58bw (in harness), D79 team, Ore; S31 at "Chinook" kennis, NH
Keeshonden. N43p, Ja54c
Kelpie, Australian. D41p (Barb) & bw
Kuvasz. D41p
Komondor. S44p & bw, D41bw
Lhasa Apso. Ja54c
Malemute. D41p & bw, S63
Malemute, Alaskan. *See Eskimo dog, Alaskan*
Maltese. *See Terrier, Maltese.*
Mastiff. Mr19p, D41p Old English & Bull
Mastiff, Tibetan. Je33
Mexican hairless. Mr19p, Ap44c
Newfoundland. Mr19p, D41p incl Landseer N., Ag48p, J141
Otterhound. Mr19p, O37p
Pekingese. Mr19p, Ap44c & 2bw
Pinscher, Doberman. Mr19p, D41p & bw, Ag58p & bw, Ja54
Pinscher, Miniature. Ap44c
Pointer. Mr19p, S47p & bw
Pointer, English. Ja37p & bw
Pointer, German short-haired. Ja37p
Pomeranian. Mr19p
Pomeranian, Toy. Ap44c & bw
Poodle, Corded. Mr19p
Poodle, Curly. Mr19p
Poodle, Miniature. N43bw
Poodle, Standard. N43p & 3bw, S44, Ap44, Ja54c
Poodle, Toy. Mr19p, Ap44c & bw (beside Standard P)
Pug. Mr19p, Ap44c
Puli, Hungarian. S44p & D41bw
Rampur. O37p
Reindeer dog, Siberian. *See Samoyed.*
Retriever, Chesapeake Bay. Mr19p, Ja37p & 2bw, S47p, Ja54c, S64 & Ap41c in action
Retriever, Curly-coated. Mr19p, Ja37p, S47p
Retriever, Flat-coated. Ja37p, S47p
Retriever, Golden. Ja37p, S47p, S47-2bw
Retriever, Labrador. Ja37p & bw, S47p & 2bw, Ag58 as golf caddy
Ridgeback, Rhodesian. S44p & bw, O37
Rottweiler. D41p ("butcher dog")
St. Bernard. D41p & 2bw, Mr19; Ja57 (feat) dogs & their work at Hospice in Alps
St. Bernard, Smooth. Mr19p
St. Bernard, Rough. Mr19p, Ja54c & bw
Saluki. O37p & 2bw, Ag58p
Samoyed, or Siberian reindeer dog. Mr19p, D41p, Ja54c
Schipperke, Belgian. Mr19p, N43p
Schnauzer, Giant. D41p, Ag58p
Schnauzer, Miniature. F36p, Ja54c
Schnauzer, Standard. F36p, Ag58p
Seeing Eye dog. *See Shepherd, German.*
Setter, English. Mr19p, Ja37p & 2bw, S47-2p & 2bw, Ja54c
Setter, Gordon. Mr19p, Ja37p, S47p
Setter, Irish. Mr19p, Ja37p & bw incl pups, S47-2p
Sheep-dog, Old English. Mr19p, D41p, Ja54c, Ag58
Sheep-dog, Pyrenean. Mr19p (white), D41p (Great Pyrenees dogs)
Sheep-dog, Shetland. D41p, Ja54c & bw
Shepherd, Belgian. Mr19p, D41p (Groenendael & Malinois)
Shepherd, German. Mr19p, D41p & bw incl "seeing eye", Ag58 pns & bw
Sled dogs. D73 Gr'land, D41-2
Slughi. *See Gazellehound, Persian.*
Spaniel, American water. S47p
Spaniel, Brittany. S47p, Ja54c
Spaniel, Clumber. Mr19p, Ja37p, S47p
Spaniel, Cocker. Mr19p, Ja37p, S47p (American) w pups; Ja54c. *(See also Spaniel, English cocker)*
Spaniel, Dwarf. Ap44c
Spaniel, English cocker. S47p & 2bw
Spaniel, English toy. Ap44c & toy s in 17th cent Dutch pn
Spaniel, Field. Mr19p, Ja37p
Spaniel, Irish water. Mr19p, S47p
Spaniel, Japanese. Mr19p, Ap44c
Spaniel, King Charles. Mr19p
Spaniel, Springer. Ja37p, S47p & bw, Ja54c (English springer)
Spaniel, Sussex. Ja37p, S47p
Spaniel, Welsh springer. S47p
Spitz. Mr19p
Terrier, Airedale. Mr19p, F36p & bw
Terrier, Australian silky. F36bw
Terrier, Boston. Mr19p, N43p & 2bw, Ja54c
Terrier, Bull. Mr19p, F36p
Terrier, Bedlington. Mr19p, F36p & bw
Terrier, Cairn. F36p
Terrier, Dandie Dinmont. F36p
Terrier, Fox. Smooth-coated: Mr19p, F36p & 2bw (performing tricks). Wire-haired: Mr19p, F36p & bw.
Terrier, Irish. Mr19p, F36p
Terrier, Kerry blue. F36p; Je51
Terrier, Lakeland. F36p
Terrier, Maltese. Mr19p, Ap44c
Terrier, Manchester. Mr19p, F36p
Terrier, Schnauzer. *See Schnauzer.*
Terrier, Scottish. Mr19p, F36p & bw pups
Terrier, Sealyham. F36p, Ja54c
Terrier, Skye. Mr19p, F36p
Terrier, Toy Manchester. Ap44c
Terrier, Welsh. Mr19p, F36p
Terrier, West Highland white. Mr19p, F36p
Terrier, Yorkshire. Mr19bw, Ap44c & pups, Ja54c2
Weimaraner. S47p & bw
Whippet. Mr19p, O37p & 2bw, Ja54c
Wolf. S44p (black & gray) w cubs
Wolf, Gray. S44bw
Wolf, Texas Red. S44
Wolf, Timber. Mr19pn, S44bw
Wolfhound, Irish. Mr19p, O37p, Ag58p, Ja54c
Wolfhound, Russian, or Borzoi. Mr19p, O37p & bw

DOMINICAN REPUBLIC. *See WEST INDIES*

DRAKE, FRANCIS. F75(4pn, old prints, maps; by Villiers) life & voy around world 1577-80

DRAMA. *See ARTS & CRAFTS.*

DUTCH EAST INDIES. *See INDONESIA.*

DUTCH GUIANA. *See SURINAM.*

EARHART, AMELIA. My35 flight fm Hawaii; S32 1st woman to fly acr Atl solo in My32

EARTH SCIENCES. *See PHYSICAL GEOGRAPHY.*

EASTMAN, GEORGE. S54 E & hist of photog

ECOLOGY. *(See also CONSERVATION; POLLUTION.)* Jl76-3 trends in US land use; efforts to curb abuses; 5 noted thinkers explore fut; Asimov reports on artif environ of space satell colony; use of Landsat phot for land use; wat & marine resource plannng & mappg vegetatn; Inds' view of relatn to land

EDUCATION. *(See also INSTITUTIONS)*

Elementary. F51(pns) Country school (W Homer) & The schoolroom (anon.); O78 mod 1-rm sch hse, Neb; Ap69 1 rm sch hse, N Alas; N71 same, Ky; S46 pub sch "thrift club", Ark; My48 Havasupai Ind sch, Ariz; Ap74 campers acclim to nature, Wis lake country; D53 rail-borne mobile sch in N woods, Ont; Mr75 1-rm sch'hse, NS; Mr67 sch servg housg proj, Guadalajara, Mex; Ja77 physics cl, Cuba; S75 Gr'land sch'rm; Ap76 & Ap71 Irish lang taught in Ir W coast schls; Ja70 experim Gesamtschule K-13, E Berlin; S74 day care cent, E Ger; O73 pub elem sch, Istanbul; Ja66 Arab boys' sch, Riyadh; O75 priv girls' sch, S Arabia; Ag66 Afr childr lrng read Arabic by prayerboards, Mauritania; Je71 & Je68 Berber lad lrng Arabic in mt sch, Morocco; S64 old & new schls in Gabon; D66 anc Mesopotamia schlrm(pn) & mod Syrian boys' sch; Ap76 Baghdad Engl tchr visits marsh peop, S Iraq; S64 Eng class at Antakya, Turkey; Ja67 boys' sch in Lahore founded by Brit; N52c outdoor class on mt-top, Pakistan; O66 Hillary sch in Thami, Nepal; N76 elem Eng cl, Bhutan; Ja74 rough-hewn sch'rm, Laos; Ag74 k & jr hs, N Kor; N64 sch at Sian, China; Je50 el sch tchr trng, Kor; My50c outdoor art class, Japan; Ja53 class in Engl for Austl aborigines; Mr56 tchg aborig w abacus, Austl; Ap69 "stone age" childr at mission sch, New Guinea; S55 el sch, Borneo; Ap71 day-care sch, Budapest

Special. Mr55(f) & D66 Clarke Sch for Deaf, Northampton, Mass; D53c sch for deaf, Ill State Norm U; Ag48c RI Sch of design; Jl49 Carnegie Tech advt design cl, Pa; S77 educl TV for Lapps, Norw; Ja77 sch of art, Havana

Secondary. Je69 Deerfield Acad & Bement Sch, Mass; Mr69 h s class, Korea & lang lab; My69 boys' & girls' intermed schls, Kuwait; Ja72 Christ's Coll, Angl sec sch, N Z

Higher. S46(av) U of Col, Boulder; D66 lang lab, Smith Coll, Mass; Jl36c Dunster Hse, Harv; Jl45(f) & Ap53av Georgetown & its univ; N33av Cornell; My51 Williams Coll class, Mass; F27 Johns Hopkins fm air; My50c U of Va; Ap70 VMI ch services, Va; Jl49c Chin culture cl, Baldwin Coll, Va; Ag40av WV U, Morgantown; Ag41av Duke U, NC; Ag71 Oral Roberts U, Tulsa; Jl69 "conversation pit", U S Internatl Univ, San Diego; Jl62(f) Internat Sch of Am "round the world sch"; Ja47c Havana U; N29(f) Oxf U; Ap46c(f) & S36c(f) Camb U; Jl72 Sorbonne, Paris, lect hall; My71 US students, Leningrad State U; Ap71 U of Technol, Budapest; S59 Russ univ classes; Ag45 Am colls in Near E; S57c(f) Robert Coll & My45c same w Am Coll for Girls, both near Istanbul; N67 student union bldg, U of N.S.W., Austl; Ap65 Haile Selassie I Univ class, Ethiopia; Je77 Rand Afrikaans U, S Afr

Technical and Vocational. My52c(f) W Pt; D71 math lect for milit, Tsinghua U, Peking; Ja77 vocat ed, Lenin Sch, Cuba; N52c girls study medicine at Fatima Jinnah med Coll for Women, Pakistan; My78 Meharry Med Coll, Nashville, Tn; F54 business class w abacus, Hong Kong; My67 ed in Micronesia, esp medical; Ja70 Humboldt U gynecology faculty, Berlin; Ag67 dental clinic in Rarotongo, Cook isl; O70 Coll of Vet Med, U of Sask; Ag66 atom studied in Guinea.

EGYPT. Mr77-2(1 on anc art) mod changes; Ap40c2 mod E; My72(maps) Cairo; My65 "Yankee" cruises Nile; Aswan Dam constr details; My55 Nile kayak trip; Ag65, D54c, S26c2 & Mr46c all in pt; Je75, Mr26, N35, Ja57 & Ja52 Suez; Ja76, Ja64 & D48 Sinai monastery; F44(f) srch for K Solomon's mines, Sinai

History. O41c2(32pn) anc E life; Mr77 anc art & life; O63(pns) threatened treasures of Nile above Aswan Dam & My66(13pn;fdts) Abu Simbel treas saved; review of anc rites &c; My69 same restored at higher level; N55 archaeol; N70(2pn) Akhenaten Temple reconstr on paper by computer fm photos of 35,000 sep stones; My23-2 duot & O63(Noblecourt) tomb of King Tut discov; Ja76 Sinai, in Moses' ftsteps

EISENHOWER, DWIGHT D., 1890-1969. Jl69 life & funeral; My60(pn) flight to Asia, Afr & Eur

ELIZABETH I. *See ENGLAND: HISTORY.*

ELIZABETH II. Je59; N61

ENERGY. *See INDUS:POWER*

ENGINEERING. *See ARCHIT: CONSTRUCTION METHODS; BRIDGES & TUNNELS; CANALS; INDUSTRY subhds; SCIENCE; TECHNOLOGY, HIST; TRANSPORTATION; U.S. ARMED FORCES*

ENGLAND. *(See also SCOTLAND; IRELAND)* O79 (map supp: Brit Isles & Mediev Eng) tradit E & probms of today; Ag50c, Ag40c3(& duot) canals, pageants, coast; Jl74 explorg E's canals; My29c5(2c) Lond, Devon, Lakes; F32c storied bays; Ag63, Ag61 & Jl15 S coast & ports to Land's End; Jl44 agric; Ap & O41 home front; Ag42(f) Brit at war; Mr34 & Ap35 countryside, castles, cottages; Ag50c woman hikes Edinb-Lond

London. Je66(fdts of Qu Eliz opening Parliament & pic map of City); Je61(2fdt pic maps) "the City"; Ja37c2; F32; My26; S53c Coronation of Eliz II; My37 coron rte, Geo VI; Ag35-2 pageantry of Geo V's Lond; L by night (pic seq); Ag46c2 Westminster; D62(pn; fdt pic map) Roman Lond; Ja72(pns; pic map) Chelsea, haven of individualists; Je53c zoo; Ap50c Kew gardens; D47 postwar; hardships; S15 *(See also subhd HISTORY below.)*

Other Cities. Ag40(duot) coastal cities in war; Ap52c Portsmouth; F46c & Jl38 Plym, Ap46c2 & S36c2 Cambr; Ja41 Winchester; Ja44 Dover; Ja40 Southampton; Ag34 Yarmouth fishing; F33 Whitby fishing

Sections. Ap56, Ap36c & My29c2 Lakes; Jl36c War-

wickshire; Jl58 & F39c2 Thames & Windsor; Ap33c2 Severn vall; Je74 & My48c Cotswolds; Je53c E coast towns, cradle of the Pilgrims; S74 Boston in Lincolnshire; Jl35 Sussex; My29 Devon & Fenlands; Je72 gypsies gather Applegate Fair; Ag61 & D24 Cornwall; Je64 St Michael anc monast & castle; Je65, Je44, Ap40 & D23 Wales; N69 investiture of Pr of Wales, Caernarvon castle

Islands. My71 & Ag20 Channel isl; Mr38c2 Guernsey; Jl67(Villiers) & D38c2 Scilly; S72 & My37c2 Man; My47 Lundy & sea birds; Ag38 Skokholm & birds, off Wales; Ja35c2 Wight; Jl32 Sark; O55 Caldy, off Wales; O52(f) Holy Isl & the Farnes (off E coast)

History. Ap49c(51pn) entire issue on hist & lit; Ap45 hist landmks; S55-2 landmks of lit Eng

Je60(4pn) Stonehenge; D62 Roman Lon, Norman Conq, Domesday Bk(pns, fdt pic map); N46 Roman remains, Hadrian's Wall, silv plates, mosaics; Ja41 Winchester, 1st capit; F41 Sutton Hoo Vik ship burial mound; Ag66(5pn) Bayeux tapestry story of Norman Conq

Jl47(16 etch) castles; D39(16 etch) cathedrals; Mr31-c2 hist inns; Ag46c Westmin; My64 (fdt pn of Globe Thea & decor map of Shakespeare's Eng) S's Eng; Jl36c Warwickshire; N68 world of Eliz 1(many ports), tomb, Sp Armanda; F75 Drake & his voy around world 1577-80; Je69(pn) Armada wrecks found off Ire; Ap48c founders of Va

Ap74(f, old prnts) Eng of Dickens esp Lon; Ag65 Churchill in 3 wars & funeral

ENTERTAINMENT. *See subh of INDUSTRY or SPORTS*

ERITREA. *See ETHIOPIA*

ESKIMOS. *(See also GREENLAND and U.S:ALASKA)* O49c2(l6pn); Ja54c Bering Sea esp seal & walrus hunting; D73, O46c2 & O51c Gr'land; Ja47c Canada's caribou Esk; Jl68 E of N Can; F71 Baffin Isl & My 64 Banks Isl Esk life; NW Territ; Mr74 E of Can-NW Territ; N77 Inuit of NW Terr; N56 Hud Bay E & archaeol; Jl52c E life in Alas; Je75 assimil in US Alas life; O71 modernized E life on N Slope, Alas; Mr73 Alas Es subsist on whale kills; testimony in US Senate; Ap69 & Ap51 Little Diomede; N56(f) Sadlermiuts & Aiviliks like Dorsets of 2M yrs ago; My39 archaeology

ESTONIA. *(ESTONIAN SSR)* D39; Je38 pt

ETHIOPIA *(ABYSSINIA)* Ap65 incl terrain, pub bldgs &c; Je31c3 incl coron of Haile Selassie 11/30; Je25; F70 Danakil nomads of wasteland; Ja73 Dorze people, weavers; D70 mediev churches, N highlands; S35-2 Eritrea (as Ital colony), highlands; N35 open air courts; Je35; Ag69 locust plague of '68; Ag65 pt; D76(pn) archaeol: first "family" of early man *(See also ANTHROPOLOGY)*

ETHNOLOGY. *(See also ANTHROPOLOGY) D18* (entire) races of Europe; S16c2, N15 & Ap15 human types of many lands; F17 US immigrants; Ag75 Toronto, Can, as melt'g pot

D75 compar of anc & mod Mayas; F68 Ecuador, Negro, Span, jungle & highland Inds; My68 Finl; Ja36c2(26pn) Cent Asia tribes; Mr62 Mongol types; My49(21pn) Tibetans; Ja47(f) Lolos of W China; My63 types of India; O70 Bondas, hill people; O66 Sherpas, Nepal; Ap51c(21pn) & Mr71-3 Indochina; F72(f) Karens of Thailand; N67 Requibats of W Sahara; N54c Kazakhs; F63 & Mr22 Burma tribes

Ag71 tribes of Mindanao, Phillipines; My77 Ibans or Sea Dayaks, Malaysia; Jl68 mixed stock on Chichi Jima isl; Ag74 Maoris, NZ; D74(4 arts) life, archaeol, & hist of Polynesians; Jl62 Tahiti types

Ag64 racial types of Mozamb; Ap65 same in Ethiop; Jl57 Afr tribes (Moors, Tuaregs, Pygmies, Wagenia, Mangbetu); Ag59(14pn) Afr tribes(Kaleri, Mada, Fulani, Kano Moslems &c) &F60 & D54c Pygmies; O54c Masai, Kenya; Mr69 Dogons of Mali; N62 racial medley in S Afr; Je77 race problms of S Afr; Jl65(Hung), Je72(Eng), My73(Fr) gypsies

EUROPE. *(See also separate countries; also HISTORY)* F64 LBJ's flight to N Eur; Mr25 & Je39 air phot; N50c & Je38(aerial) Baltic lands; D51c pt; My52 N Sea rim; S65 Alps in 6 countries; O77 & Jl65 Danube trip S Ger-Bulg-Black Sea; D29c2 Danube country; My37 riv trip Fr-SE Eur; D45 Vienna, Budapest, Prague; Je62 (pic map) in crusaders' footsteps; Ap42 Medit lands; Jl55 youth hostels; Je57 trailer caravan

EXPLORERS. *(See also ARCTIC; ANTARCTIC; U.S. HISTORY; VOYAGES)* Mr24(by Conrad) genl essay; N64(3pn) Viking settlemts in New World found; D74 early Polynesians expl & settle S & W Pacif; N75 (f; 2pn &c) Columbus & the New World; Ja75 Portug Corte Real, first Eur to expl N Am in 1511(?); N27 Vasco da Gama; Je76(f;pns;old prnts; Villiers) & D32 Magellan circumnavigates globe 1519-22; N60 Prince Henry the Navigator & Portug exploratn; F75(4pn,old prnts, maps; by Villiers) Drake's Golden Hind around world 1577-80; Ap39 Hudson's voyages; S71(Villiers) Capt Cook's 3 voyages in Pacif, Alas & Antarc; Ja27 same in Pacif; F79 Burke-Wills 1st exped acr Austl S-N, 1860; Ap62 a new Bounty (rebuilt) to Tahiti & D57 Bounty relics; Je53c2 Lewis & Clark trail & 8 maps of Amer disc; Jl53 Perry opens Japan; O53 Peary; O63 expeds sponsord by Nat Geog Soc

FAEROE ISL. S70; N30

FALKLAND ISL. Mr56 esp penguins &c

FERNANDO NORONHA. O59 pt; Jl27 penal isl

FESTIVALS, CARNIVALS, PAGEANTS, CELEBRATIONS &c. *Arranged geographically. (For world fairs &c see country headings)* My66 & Je54c Pasadena Tourn of Roses; Mr52c Tulip f, Holland, Mich; F69 Dogwood F parade, Atlanta; Mr68 Mobile & N60, F53c & F71 & D47c N Orl Mardi Gras; Mr66 Sugar Cane f, La; N60 Miss cotton f; D47c(f) Tex Indep day carn, San Ant; S68 Newport Jazz F; D66 bishop blesses fishg fleet, Provincetown; Jl53c same, Gloucester; D55 Christmas cookies, US; Ja58 & My67 Quebec Mardi Gras

Ag68 Feast of Assumption, Huamantla, Mex, & bull fight; Mr67 Oct F, Guadalajara, Mex; Je71(fdt) Holy Wk w Cora Inds, W Mex mts; Jl65 carn of flowers (Desamparados), C Rica; N71(fdt) Mardi Gras, Trinidad

Mr60 Easter Wk, Chichicastenango, Guat; Ind & Chris rites; N74 Holy Wk, Antigua, Guat; Ag76 Corpus Christi day, Venez; S39c2 Rio's pre-Lenten carn; F60

Aiquina f, Chile

O57 Scot Magna Carta pageant; Ag76 summer f of music & drama, Tattoo Drill, Edinburgh castle; D54 Viking f, Shetlands; Je65 Natnl Eisteddfod, Wales; O79 Widecombe fair, livestock & crafts, Eng

Ja76 St Lucia choristers, Stockholm, & Midsummer's Eve dance, Swed; Ag48c Constit day, Nor; Ap65 Pardon of St Ronan, Brittany

Mr74 pre-Lenten Fasching & Oktoberfest, Munich; F57 Dinkelsbuhl of 1632, ann pageant; D35c2 Oberammergau Passion Play; Ag36 Imst pre-Lenten maskers, Aus

O58 Swiss winegrower's f (once in a generatn), Vevey; Jl68 firewks on Midsummer Night, eve of St John's Day, Lake Como

O26c2 Nice carn; Mr65 Corpus Christi, Sitges, Sp; Ap51c Seville Holy Wk; Mr65 Madonna of El Rocio, Seville

Je63 Ventimiglia, It, Battle of Flowers; N56 N It chess pageant; Ag51c(f), N74 & Ag26 Siena's Palio pageant; Mr76 f of St Rosalia, Sic; Je69 pre-Lenten f, Malta; Ap55 Corpus Christi, Canaries; F76 F of Holy Spirit, Azores; My76 f of San Juan, Menorca

My65 mulid, anniv of Moslem saint, Egypt; O60 Holi f, India; Mr60 Hindu f, Nepal; My58 Dasara f, Ind; O70 Car f, Puri, & F of Shiva, Ind; Ja67 ann cow sacrif of Pakis tribe; Ja65 royal wedd, Rajasthan; N76 Tsechu relig feast, Bhutan; N70 Padma Sambhava f, Sikkim; Ap66 & Jl32 Perahera f, Kandy, Sri Lanka; F of Vel, Sri L

Ja69 Sun Yat-sen's b'day parade & Taoist temp f, Taiwan; D36 & F50 Chinese New Yr; O64 same in Cambodia

My50c Nikko f, Jap; Jl78 Chiyoda rice f, S Jap; D68 snow f, snow sculp, Jap; S66 Chin New Yr, Philipp; Mr77 Holy Wk processn, Manila; My74 nekowiar f, New Heb; Ap62 f wk in Dunedin, N Z

Ja67 aloha w leis, Hawaii; N60 King Neptune rites crossg Equator

FINLAND. My68; O38c2, Ag47, F40; Ag54c & Jl49c & N39c2 all Lapland reindeer herders; My25 Helsingfors; F64 LBJ flight; Ja35 Aland isl sailing ships

FISHES, CRUSTACEA & OTHER MARINE LIFE.

(See also INDUSTRY:FISHING; PHYS. GEOG: OCEANOGRAPHY; SHELLS and SPORTS: BOATING &c)

Collective. F61 how sun gives life to sea; Ag63 fluorescence in marine life; F39c2(54pn) western fresh water f; Ag23c(16pn) US fresh water food & game f; O38c2(31pn) Pacif coastal f; D23c(16pn) N Atl food f & fisheries; F37c2(8pn) S Atl shellf &c; Ag36c2(8pn) shellf, starf &c of N Atl; Ja21c(16pn) & Ja22c(16pn) Gulf Str f; F76 adrift on sea of sargassum; S75 f of Red Sea depths (Clark/Doubilet), D34(16pn:Beebe) deep-sea f, Berm; Jl50c(pn) a few Am f; N66(pn of 53 var) marvels of coral realm; Mr41c2 Pac corals f; My76 man-made coral reef of Jap warships sunk at Truk 1944; Ja34c2 trop fs; O74(f) plankton; Je73, D72 & N68 pn of many species, Barrier Reef; Mr77 fish farmg, Philipp

Special. *(Alphabetical by familiar name).*

Acara: O76 black a, S Am f now in Fla. **Albacore:** *see Tuna*. **Alewife:** D23pn. **Alga:** My76 calcified brown a; Je55 rosy a. **Amphipod:** Je55 shrimplike a. **Amur:** O76 white, gluttonous oriental grass carp now in Fla. **Anableps:** Mr78(f,pn,6c Zahl); Ja21pn; Ap59b "four-eyes." **Anchovy:** O38c northern. **Anemone:** N66, N61, F56, N71, Je55 metridium sea a; S75 sea a shelters damself & clownf(2p); My76 sea a & clownf hatchg eggs under it; anoth w cleaner shrimp on tentacles; S78 & Ja71 sea a; Mr54c & N53c sea a devouring f; Ag72, My55, F52c, Je40c. **Anemonef:** F56. **Angelf:** N66 queen a(cover pic) juv & ad; F56 emperor a; Ja21p blue a; Mr54c blue-nosed, F52c, D32 pn, Ja27 black, N54c silver-&-black. **Anglerf:** D34pn, 3-starred, pygmy & shining-toothd, S75 baitg prey(port), My79. **Anthiases:** S75. **Apagon,** striped. Mr41c. **Arapaima** (or pirarucu): Je57 largest freshwater f in S Am. **Archer:** Ja34c. **Arrowworm:** Jl52pn, D34pn scarlet a. **Ascidians:** Je55 colonial

Barb: Mr31pns barbus oligolepis & rosy b, Ja34c dunckeri. **Barjack:** Ap75 w sharks. **Barnacles:** N73 many var, hosts, matg, D32c, Ja22 on ship keel. **Barracuda:** Ja22p, Ja62, Ja50c, Ja27, Mr54; S75 school of long-nose b. **Bass:** Jl50pn black b, Ag23p & bw calico b, D23 47 lb channel b, Ag23p & bw large-mouthed black b, O52c polka-dotted sea, Ag23p rock b, O38p white sea b, F56 & My55 sea b, My49 black sea b, or jewf landed on beach; D65 fairy b & wrasse. **Basslet:** D72 fairy & black cap. **Batf:** S78 rosy-lippd, Galap. **Bathysphere f,** untouchable: D34pn. **Beakthrower:** Ag36pn. **Benthosaurus:** My58(hops on long fins). **Bigeye:** Mr41c red b. **Birdf:** Mr41c. **Black swallower:** D34pn. **Blenny:** My55b horned, Mr41c yellow. **Blue chromis:** D34pn. **Blue-eye:** Ja34c Austl. **Bluehead:** Mr54c. **Bone-f:** Ja22-pn. **Bream:** Ja72 dead of oxyg lack. **Brittle star:** Jl52pn. **Broadbill:** Mr41. **Brotulid:** O77. **Bryozoans** ("moss animals"): Ag36pn, F76 sargasso (enl 60x). **Bullhead:** Ag23pn. **Bumpheads:** D32pn scarlet. **Burbot:** Mr40 Danube. **Butter hamlet:** Ja62. **Butterf:** D23pn, Ag36 caught by starf. **Butterflyf:** S38pn, Ja21pn, Mr41c many var (longfin, blue-striped, longnose &c), F56 longnose & spiny, D65, Ap63, Ja62, Ja64, Mr54c & Ja34

Cardinal f: Ja64. **Carp:** Mr40, F68, Ja72 dead of oxyg lack, O76 white amur, orient c. **Catf:** Ag23pn spotted c, Ap48 50 lb Miss c, Je69(f,drgs) walking c breathes air, O76 Siamese c crawld free in Fla. **Cephalopods:** Jl52pns. **Cerata:** O59. **Char, arctic:** My64. **Chaunax pictus:** My75. **Chromide, bluegreen:** Mr41c. **Cichlasoma severum:** Ja34c. **Clam:** F61, S38pn & Ja57 & My67c, My67 & Je40c, My67 giant 3c, O77 & N79 same at sea floor vents. **Cloth-of-gold:** Ja57. **Clownf:** Ja57, F56, S75 shelterg in sea anemone. **Cod:** D23pn, O38pn Ling c, F56, S30(260 lb) & Je40 black rock, Ap72 Maori c devourg sea snake. **Coelenterates:** Je55 many var *(see also jellyf, sea anemones, corals, hydroids)*. **Conch:** F52c Caribbean, F37pn queen. **Coney:** D72. **Constellation f:** D34pn 5-lined. **Copepod:** Jl52pn, F61, Je31pn. **Coral:** S38c2 Pacif pearl lagoon; Ja57(41c) Barrier Reef c; shelf c; D32c2(8pn); Jl78 many var, Palau isl near Phil; sea whip, leather c(2c), tree c, wire c, sea fan c, bubble c, daisy c, castle c; My79 Hawaii's deep-sea jewels, precious cs: black c tree, gold c tree, calyptrophora; Je34-pns radiant star, commercial, sea anemone, polyps, brain c, gorgonians &c; O59 Hawaii c reefs; Ja27c2 c reef life; Je55, F52c, Je40c; My76 alcyonarian c, bubble c, tube c, Ja64, Ag71, Ja62 & Je40 brain c; S75(2p port) & F61 soft c; Ja64 & Ja62 & Je55 star c, Ag71 fire c, Ja71

black c, S75 gorgonian c & whip c, Jl78 sea whip. **Coral f:** 3-striped Mr41c. **Cowf:** Mr54c, F52c, Jl52pn, Ja21pn. **Cowrie:** F37pn, Ja57 Milward's & pustulose. **Crabs:** Jl28c(8pn) c, F37pn ghost, land hermit, mangrove, mountain, sponge, white cs, O77 cs dining on feather-duster worms, F71 king c, Mr54c c larva, F61 baby c, N66 & Ag71 arrow c, Je72pn, My77, & My55 blue, O77 cancroid c, Jl52pns box &c, O59 boxer, N79 brachyuran, My77 decorator c, Je72pn fiddler, N79 galatheid, Ag36-pns green, Jonah & rock, D59 hapalocarcinus, living inside polyps, My77, D72, Ja57, F52c & Je40c hermit; Ap59 horseshoe & its eyes, Mr75(Zahl) marine, O38pn market, D32pn mask-backed, Jl52pn porcelain, F76 & Mr54 Portunus, scarlet c, O38pn & F52c rock cs, O38p sheep c, Ja57 soldier, D72 spider c. **Cranchia:** Jl52pn. **Crappie:** Ag23pn. **Crawf:** *see Lobster, spiny.* **Crocodile f:** S75 (2 port). **Crustacea:** D34pn, Deep-sea, F52. **Ctenobrycon spilurus:** Mr31p. **Cuckold:** Ja21pn. **Cunner:** Ag36pn. **Cusk:** D23pn. **Cuttlef:** *see Squid.* **Cyprinidon salinus:** Ja70

Dab: O38pn mottled sand d. **Damsel:** S75 shelterg in sea anemone, My76 nestg in jaws of oyster shell; F56. **Danio:** Mr31pns blue & striped. **Dascyllus, banded:** Mr41c. **Decoy f:** Ag74(f). **Deep-sea f** (only partially identif): D34c2(16pn) ½ mile down, Beebe; N53c found in Messina Straits by Zahl. **Demoiselle:** S38pn, F56. **Devilf:** Je19 many fishing scenes, S78 & N59 manta ray caught, S71 d tows snorkel diver. **Discus f:** My60 breeding. **Dolphin:** Ja22p, O66. **Dragonf:** D34pn scarlet-&-gold lighted, N53c d eating prawn, Je31pn swivel-toothed. **Drum:** Ag23pn fresh-water d.

Eels: Ag23pn common e, D34pn great gulper e & tailless e, Ja64 snake e, Je40 reef e, Je31pn avocet-billed e, My55, S71, N72(f) garden e stay anchored on bott, Ja71 snipe e, Mr54c baby e. *(See also Moray).* **Egg shell:** F37pn spindle & swollen. **Eulachon** (candlef): F39pn. **Filef:** F76 also devourd by histrio, D72, Ja62, Mr54c, S38pn banded, Mr41c fantail. **Flamingo tongue:** *see Snails.* **Flatf:** Jl52pn. **Flounder:** N66 eyed, O38pn starry, D23pn win & sum, Je72 on bott camouflaged. **Flying f:** Mr54c, Ja64 under water, O38pn Calif. **Four-eyed f:** *see Anableps.* Ja21pn. **Fridmani:** S75 purple f. **Fringehead:** Ag72 yellow-fin.

Gag: Ja22pn. **Gar:** Ja67, Ap30 alligator g, D34pn rainbow. **Garibaldi:** O38pn & Ag72. **Gaudyf:** S38c. **Gnathipops:** Ja27 goldbrowed. **Goatf:** Mr41c yellowspot & red, Ja64 spotted, D65, Ja27. **Goby:** Ag72 blue-banded, S75 & Mr41c clown, Ja64 neon, Ag71 shark-nose g. **Goldf:** O24c (8pn) cultiv in Amer; Ap73(Zahl phot) many var: bubble-eye(f), shubunkins, orandas, pompon, lionhd, Moors, calico telesc, matg of g(hatchlgs & larvae), celestial, Jap Ryukin, Ja34c glass perches, pompadour, jewelf, cichlasoma, panchax, blue-eye, archer f, gouramis, barbus, veiltails, tetra, minnows, et al; Mr31 (8pn) miniat aquar f. Braz half-moon, pristella, top minnows, rainf, catf, guppy, mosquito-f, climbg perch, gouramis, moonf, weather f, pygmy f, toy f, panchax, paradise f, danios, barbs, scat. **Gorgonians:** S75, D72, Ja62, Je34pns, Ja27c, S70. **Gouramf:** Mr31-pns croakg, dwarf, spotted, Ja34c. **Greenf:** O38pn. **Greenling:** O38pn "rock trout"; Ag72 painted g. **Grenadier:** *see Rattail.* **Grouper:** Ja50c, Ja22pn black g & red g, F56, Mr41c brown-spotted g, D65, Ja27 yellow-finned & Nassau; My58, Ja50c. **Grunion:** My69(feat) spawning. **Grunts:** Ja64, Ja62 white g; N66 & Ja27c French & yellow, N66 pin-striped, Sp, N66 & Ja21pn blue-striped. **Guitarf:** F68, My49. **Guppy:** Mr31pn. **Gurnard:** Mr41c flying g.

Haddock: D23pn. **Hake:** D23pn squirrel. **Halibut:** D23pn. **Hatchetf:** Je31pn, N53c silver, My58, Ja34c striped. **Hawkf:** S75(port) "plaid-clad", My79, F56, Ja62 blackline, Mr41c whiteline & ringed. **Helmet shell:** F37pn cameo. **Herring:** D23pn. **Hinalea lolo:** Mr41c. **Hind:** Ja21pn rock, D72 red. **Hogf:** Mr54c, Ja27c; Ag71 Spanh. **Hydroids:** Ag36pns, F37pn, Je55 tubularia & clava, D72. **Hydrozoans:** My77. **Jack** (caranx): F56, Mr41c, Ja22pn amber j & yellow j ("runner"); F76 sch of y jacks; My76 feedg in shelter of jellyf stingers. **Jawf:** N66 yellowhead. **Jellyf:** Ag26c2(8pn), Je55(Zahl phot) many var; lion's mane, moon, sea gooseberry, bell, rainbow, Ja64, My76 clo w jacks foraging & swarm of j, Ja60 deepsea, N61 incl stalked, S75 moon j, Je55, My55 sea nettle, F37pn & Ag76 medusa & N53c w prey, F37pn mushroom. **Jewelf:** Ja34c. **Kelpf:** Ag72 giant k. **Killif:** Je72 eatg mosquito larvae. **Kingf:** Ja22pn, Jl39 as caught. **Krill:** N71

Lamprey: Ap59 & Ag73(on brown trout, Gt Lakes), sea l. **Lanternf:** D34pn giant & common, N53c, Je31c. **Leaf f:** S78 Indo-Pac, Galap, Ja34 dark-brown. **Limpet:** Ag36pn. **Lionf:** S75, F56, Mr41c. **Lizardf:** Ag71. **Lobsters:** Ap73(f) Amer l, study of growth, trappg &c, D23pn Am l, O38pn & Ja22pn(opal eyes, crawf), S79 crawf, La, Ag36pn N Atl l, smaller crustacea &c; Je75(f) spiny l eats clam, eaten by stingray, fights moray eel; Ap77pn, F37pn, Ap70, Ag71, F58, F52c & O38pn, spiny l, Jl52pn same, S78 & Ja64 slipper & spotted l, Ja71 chirostylid l. **Lookdown** (horsehead): Mr54

Mackerel: D23pn, O38pn Pacif, Ja22p Span. **Man-of-War:** F37c2(8pn), Mr63, F61, F52, Ja21pn Portuguese. **Manta ray:** *see Devilf.* **Margate f:** Ja22pn. **Marginella:** Mr54c orange. **Marlin:** Ja22pn, F52 blue, Mr41 O72 striped m fightg hook. **Mesonauta insignis:** Mr31p. **Millepore** (stinging coral): Ja62. **Minnow:** Mr31pns Mex top & Amer top, Ja34c trilineatus & anomalus. **Mola mola:** Ap66. **Mollusk:** *see Snails.* **Moonf:** Ja22pn; Mr31pns blue, gold, red. **Moorish idol:** S38pn, F56, Mr41c. **Moray eel:** Ag72(2clo) w cleaner shrimp, D59 spotted m & others, O59 & Mr41c spotted white m, S38pn, D65, Ja62, Ja21pn & Ja64 green m, N66 purple mouth, Mr41c polkadot, F56, D71 attackg octopus. **Mosquito-f:** Mr31p. **Moss animals:** *see Bryozoans.* **Mudskipper:** Ja72-8c(f) f that climbs trees, O44 Austl, Je40, Ja34("mud-springers"). **Mullet:** Ja55. **Muskellunge:** Ag23pn & 2bw Lake Chautauqua m. **Mussels:** Ag36pns black & horse. **Mutionf:** Ja22pn

Nautilus: Ja76(f; pn; diagr) & Ag35 pn chambered. **Needleheads:** D34pn. **Needlef:** Ja64, Mr54c, O52c, Ap67 nibblers. **Neolebias ansorgi:** Ja34c. **Niggerf:** Mr41c bluespotted. **Nomeus:** F42c immune to man-of-ar. **Nudibranch:** O59 Pacif & fringed n, sea slugs, Je55 dendronotus, bushybacked sea s, depositing eggs, N66, S75(2p) n & its ribbon of eggs; shrimp ridg on n. **Octopus:** Ag35pns, D71 many varieties, Jl52pn & D71 argonaut or paper nautilus, S38pn, D32pn, Ag71, F61 baby o, Ag76 cirrate o, O77 o huntg crabs. **Opaleyes:** *see Greenf.* **Orange-skin:** Je31pn giant-mouthed. **Oys-**

ters. Ap62c, My55 o bed, F37pn coon o.

Panchax: Mr31p, Ja34c playfairi & blue gularis. **Paradise f:** Mr31p. **Parrotf:** Ja21pn rainbow,Ja64 rainbow, redtail & striped, Je31pns giant blue & cleaned by wrasse, Mr41c blue, N66 green & varicolored female, Mr54c, Ag71. **Pearlf:** N66. **Pelagia:** F37pn. **Perch:** O38pn black p, Ag23p pike-p(wall-eyed pike), O38pn rubber-lip p, F39p Sacramento p, O38p striped or blue p, Ag23p white p, Jl50p & Ag23p yellow p, Mr31pn climbing p, Ja34c glass, My55 sand, My70 Nile p. **Photoblepharon:** N78(f,pns,diagrs) "flash-light f." **Phyllosoma:** Je75. **Pickerel:** Ag23p & bw Eastern p. **Pike:** Ag23p & D58b walleye, Jl50p northern, Ap75 northern p caught thru ice by Ind. F39p Sacramento. **Pikeblenny:** D72 yellowface. **Pilchard** (Cal sardine): O38p. **Pipef:** Mr54c, O38pn, Je78, F76. **Piranha:** N70(feat), Jl61, My50c. **Pirarucu:** O72 B.raz, N33, Ap26. **Plankton:** O74(f) many var; Jl52pns, Ja60, O67. **Platy:** N54c red. **Pollock:** D23p. **Polyps:** O59 dendrophyllia, S78, N66 & Mr70 coral, D72 giant, Je40c. **Pomacentrids:** Mr41c. **Pompadour:** Ja34c. **Pompons:** N64 red. **Porcupinef:** My78 inflated, Ap63, Mr54c. **Porgy:** F56. **Porkf:** Ja62, Ja21p. **Porpita:** F61. **Prawn:** O38p, N53c flamg, eatn by dragonf. **Pristella riddlei:** Mr31p. **Protozoa:** Ag36pn swallow-tail, O77 new form. **Puffers:** Ja22 swell (puffer) f, Mr41 poison p. **Rainf:** Mr31p rivulus harti. **Rasbora heteromorpha:** Ja34c. **Rattail** (grenadier): O77. **Rays:** N59 manta or devilf, O38p electric, S75 eagle r, N52 spotted whip r, Je19 many scenes of devilfishing (see also Devilf). **Razorf:** Mr41c longfin. **Remora:** N66 on parrotf, F68 on whale shark chin. **Rockf:** O38p black r & red r, Mr41c spotted. **Rosebud:** F37pn. **Rosy algae:** Je55. **Rotifers:** F79(f,mphos) microorganisms. **Roundmouth:** Je31pn & N53c pygmy.

Sailfins: D34pn, Mr31p. **Sailf:** Je56c(5pn), Ja22p. **Saline f:** Ja70, Calif desert. **Salmon:** Ag68(6pn): sockeye, coho or silver, humpback or pink, chum, chinook or king, Atlantic, closeup phot study of spawning, F39pns of chinook (king), chum(dog), pink(humpback), red (sockeye), silver(Coho); D23p Atl, Je72 & F39p chinook s, Mr72 sockeye artif spawng channels, B.C, Je63 king & sockeye, Alas, N52 53-ib king s, D75 king s caught in Yukon r. **Sandbuilders:** Ag36pn. **Sandf:** Mr41c. **Sapphire-striped f:** N59. **Sapphirina:** D34pn. **Sardines, smooth:** D34pn, O38p Calif s (pilchard). **Sargassum f:** F76(2p) & devourg filef, Mr54c, F52c. **Sauger:** Ag23p. **Sawf:** Ag44c Lake Nicar, Ap30 La, Ja22. **Scabbard:** N54c. **Scallop:** Ja64 flame s, Je55. **Scat:** Mr31pns 4 var. **Scorpion:** S75, Mr41c common, D65 & Ja64, Ja54c. **Scorpionf:** O52c. **Sculpin:** O38p marbled s, Ap77(pn & phot) mottled s. **Scup:** D23p. **Sea beads:** Ag36pn. **Sea cucumber:** S75 matg, Ja57, N61, F56b, N66, Ag76, O77 swimmg. **Sea dianthus:** Ag36pn. **Sea dragon:** Je78(2p) leafy, weedy, or common s d (clo of male carryg eggs). **Sea grapes:** Ag36pn. **Sea hare:** F52c. **Sea horses:** Je78, Ja21pn, D32pn & seadragon, Ja59, My77. **Sea nettle:** My55. **Sea pen:** Ja71. **Sea pork:** Ag36pn. **Sea robin:** My55b. **Sea slugs:** O59 many var, Ag72, Je55c dendronotus, N61 Oreg & fronded & tawny-fringed, Je40c. **Sea spider:** Ja60, N71, Je55 ciona. **Sea urchins:** Jl52pns, S75(3c, port) prickly s u attackd by triggerf, Ag72, Ja60, O59, Ja57, Je55, F52c, Je40c. **Sea whips:** Ja62. **Sea worms:** *see Worms*. **Seafan:** D32pn, Ja62. **Sergeant Major***(Cow pilot)*: Ja21pn. **Shad:** D23pn.

Sharks: F68(2pn; fdt pn of 27 species): col phot of whitetip, lemon, whale, silky, nurse, wobbegong, leopard, ragged tooth, blue, hammerhead, great white (many action phot); physiol of s; S32(f) s fishg, Austl: gray nurse, tiger, thrasher & white; Ap75(f) "sleepg ss"; reef, requiem, bull & tiger ss; My49c bullhd, Cal; S38pn, My58pn spiny dogf s, Ja62 lemon & hammerhead, O38pn leopard, N68 nurse & blacktip s, Ja57 bronze whaler s, N53c baby s, F36 24 young removed fm harpooned s, N52c exercising s, F58b whale s, Ag44c freshwater s, Lake Nicaragua. **Sheilf:** Ag35pns; Mr69(excell; Zahl phot) **Shiner:** Ap77p black-nosed s. **Shrimp:** My65 Fla pink & Jap kuruma, My77 pink s, O38p ghost s & black-tailed s, Mr54 goggle-eyed s, Jl52pn opossum s, F52c, Jl52pn, Je40c & Je55 mantis s(or stinging lobster), D34pn scarlet s, Ja64 red coral s, N53c(deep-sea), Mr54c banded, common & grooved s, Ag36 mole s, O44; O75 fairy, clam, & tadpole s (all in Utah desert pothole); Ag67 brine s, Gt Salt Lake, S71 fresh-water s, D72 s & cleaner s, My76 cleaner s on anemone tentacles, Ag72 cleaner s w moray; Je72 2" sand s & scavenging on dead anchovy, F76 sargasso s. **Siphonophore:** N79. **Skate:** O77; S59 clear nose s's reproduction, My58 beaknosed s. **Slug:** see Sea slug. **Smelt:** D23p, N61 surf s. **Snails:** D32pn haliotis s, N66 & F52c & Ag71 marine s or mollusk (flamingo tongue), My78 hydatina physis, chiffonlike, F76 litiopa melanostoma, D72 sea s & more primit var. **Snappers:** Ja62 dog s, My77 mangrove s, F56 pelagic & blue-striped s, Ja27c gray s, D23 red s. **Sole:** N74(f) Moses s repels sharks. **Spadef:** Ja21p(or white angel), Ja62, My55b. **Sponges:** Ag36pns many var, Mr77 (microphot) many var; F37pn commercial, red branchd, encrustg, spiny tube; Ag36pn crumb-of-bread s, eyed finger s, My76 s on oysters, orange & white s & plumed hydroids; F37pn fire s, Ag76 glass s, Ja64 blood-red, Ja71 tulip-shaped & barrel s, Ja62 tube & red s, N66 & S70 tube, D72, F58, F52c.

Squid: Mr67(feat; pn) giant, Loligo, short-finned, reef s & oth; Jl52 & Ag35pns, Ja64, Ja71, Ja62 pop-eyed s, Ag35pn cuttlef, Je31pn finger-s, N53c (deep-sea) Ja68 Doryeuthis plei, Mr54c oval s (Atl), Mr41c, Mr41 giant s (many action phot), Jl71 Jap s(phosphorescent). **Squirrelf:** N66, Jl52pn, F37pn, D32pn, Ja21p(or soldato), D65, Ja62, Mr54c, F56, O52c, Mr41c whiteline & red. **Starf:** Ag72 s & 20-armed sun s, F52c, D32c, Ag36pns brittle, common crisp, Forbes', sea s, green sea urchins, phrygian sea s, red, sea chrysanthemums, sun sunburst, white-armed anemone, F37pn great sea s, Ag36 & Je55 starf devouring mussel & butterflyf, D72, Ja60, Ja71 & S70 feather s, Ja64 basket s, Ag72 bat s, Ja57 & N61 purple sea s, D72, Jl52pn, Je55 & F52c brittle s, Ja60(deep-sea), Je40c blue s, Je40c2 Barr Reef s, Mr70 crown-of-thorns s, Ja57c & pincushion, Ja71. **Stickleback:** F39p three-spined. **Stingray:** Je75 eats spiny lobster; Mr24. **Stonef:** S75, Ja57. **Stromb:** Ja57. **Sturgeon:** Mr40 Romanian s showing roe (caviar); Ja58 Quebec, Ag23p & D58b lake s, D23p common s, F32 lgst royal s caught in N Sea, F39p white s, Je51 125-lb s, Id, O52c. **Sucker:** F39p Sacramento, Ja21p shark s. **Sunf:** D34pn & O38p ocean s.

Surgeonf: Ja64, F56, O52c, Mr54(many views), N66 blue (larva-adult stages). **Surubim:** N33 S Am. **Swordf:** D23p, Je68 punctures submarine. **Swordtail:** Mr31p Mex.

Tangs: Mr41c 5 var, S38pn, My78 convict t. **Tarpon:** Ja49pn & Ja22p(or silver king), Ag71. **Tautog:** D23p. **Telescope-eyed f:** D34pn. **Tetra:** Mr31p, Ja34c bloodfin & flagf. **Tigerf:** F56, Je35 Rhodesia, Ja34c 2 rel vars. **Tilef:** D23p. **Toadf:** My55. **Toy f:** Mr31p. **Trevally:** Ja57. **Triggerf:** Mr41c many var, S75 (3c,port) attackg prickly sea urch, Ja21p & F52c queen t(or turbot), F56. **Tripod f:** Ja71. **Triton, Pacific:** Mr70 attacks starf. **Tropical toy f:** Mr31c2(8pn) t f &
iniat aquar f, Mr41c3 esp small t f.

Trout: Ag23p & bw brook, Mr69 & Ag73(w sea lamprey suckers) brown t, Jl50p cutthroat, F39p coastal cutthroat, F39p Dolly Varden, O74 same caught by Esk boy, Alas, Jl50p & Ap77p eastern brook, Jl50p golden, O50c golden t conserv, My63 stockg by air drop, Ag23p & Ap59 lake t, Ag23p, bw McCloud riv rainbow t, F39p piute, Jl50p, Ap58, Ap51c, F39pn & Ja42 rainbow t, Ag42 sch of sea t chasing sardines, F39p south fork golden t, F39p & Je72 steelhead, F39p Yellowstone.

Trumpetf: N66, Ag71. **Truncates:** Ag36pn snowy. **Trunkf:** Ja21p, Mr54c, Ja27. **Tubularia:** Je55. **Tuna:** O38p albacore, D23p common, Ja22p Allison's t, My40 caught in N S. **Tunicates:** D72, Je55. **Turbot:** Ap50 Spain. **Turkeyf:** Ap63.

Ulua (or threadf): Mr41c. **Unicornf:** D34pn, My54c. **Veiltails:** Ja34c. **Venus' girdle:** F37pn. **Viperf,** sabertoothed: D34pn, N53c. **Whalelet:** D34pn black. **Whelks:** Ag36pn dog w. **Whitef:** Ag23p. **Whiting:** D23p. **Worms:** Ja62 & Je40 bristle w, Ag36pns sea w, many var, Ja62 feather-duster w, F52c lavender disapp w, F76(enl 22x), O77, N66 & Ag71 tube w, N79(ocean floor) red-tippd & bristle w. **Wrasse:** (see also Bluehead & Hogf) S38pn ws; D65 (ent art) cleans oth f, Mr41c gray, saddle, red lined, blue lined, polkadot, hinalea hilu, F56 high-domed, Ag71 yellow w, Je31pn cleaning parrotf. **Yellow jack:** Mr41c. **Yellowtail:** O38p, Ja21p, Ja27. **Zoantharians:** F61.

FISHING. *See subh of INDUSTRY, also SPORTS: WATER SPORTS.*

FLAGS & INSIGNIA. O17c(1197 flags incl all Fed & State f, US hist, armed services insignia, correct display, f of Mid Ages, Pan Am & rest of world); S61 f of 99 UN natns, Je66 f of 10 natns born since '63(most Af); F51c(180pn) U Nations; Jl59 US flag's hist; S34c (808pn) world f; My49c(172pn) Am natns, Jl46c(84pn) seals of US states & territ; Je43(991pn) US armed forces insignia; O43c(376pn) decorations; D43c (334pn) heroes of science & mercy; D19c US decorations & insignia(119 in col) w hist notes.

FLOWERS. *See INDUS FLOWERS and PLANTS.*

FORMOSA. *See TAIWAN.*

FORTS. *See subh of ARCHITECTURE.*

FOSSILS. *(See also ANTHROPOLOGY; ARCHAEOLOGY, DINOSAURS, MAMMALS, EXTINCT)* Mr56, chart of "geol's 4 grand eras" & life forms; My69(fdt pn) x-sect of Gr Canyon showing life pre-Cambrian to Permian periods, Ag34 f fish 55 mil yrs old, Wyo; S48 fs & bones in Smithsonian, trilobite; F69 f skel extinct eleph 3 mil yrs old, Kenya; My70 anim & primate f, Kenya; D76 fs of early anim & 3 mill yr old man, Ethiop; F68 fs unearthed in hwy constr, Cleveland; Mr63 petrif forest; O59 petrif wood, Antarc; Ag75 petr tree rooted in peat in coal bed; N71 f of plant at Antarc shows earlier temperate clime; O68 oth f in Antarc; Ap66 fish f, Wyo; S77(f) insects embedded in amber 40-100 mill yrs.

FRANCE. Je60; Ag64 yacht cruise of E Fr, Medit-No Sea & on Seine; N15c(almost entire).

Paris. Jl72(fdt pic map & air views); Je52c, Jl50c; Ap45c2, D46 & Ja45 liberation; My68(fdt pic map) Ile de la Cite; Je71(fdt, plan &c) Louvre hist & many treas; Ag58 typical scenes; O36 spring; Ja25c2 & N-D17 (wartime) Versailles; Mr57 Flea Mkt.

Northwest. Ap65 Brittany, air phot of St Malo, Brest; occup, arch, costume &c; Jl23(duot) Britt incl prehist monumts; Ag29c2 St Malo & Britt; Je37 Breton fishermen; Ag43c2 Normandy & Britt; My59 & Ja32c2 Norm; My36-2(duot) Norm & Mt St Michel; Je77(pns) Mt St Michel; F40c2 agric of Paris Basin region.

Central. Ja66(fdt pic map) & O30c Loire chateaux; F53c Vezelay, Burg wine country; S57b Auvergne, b'place of Lafayette.

Eastern. Ag64 yacht cruise of E Fr, Medit-No Sea; O55 canal barges Paris-Belgium; My37 riv trip acr Eur, pt NE F; Ag27c Alsace; Je78(map) Burgundy & vineyds; N-D17 Lorraine; Mr45 Nancy liberated; Ap59 & Ap52 Alpine sheep; S60 Mt Blanc & cable cars; Ap15 pt, Fr Alps.

Southwest. Ag27 Midi waterways acr Gascony & Languedoc, incl Carcassonne; F54c Basque land, pt F; Mr53c(f) ice caves of Pyrenees; D74(f; incl Biarritz, Lourdes), Mr56 & O37c2 Pyrenees.

South. My75(f) Provence; Je67 Riviera; Jl51c(f) Languedoc, Rhone-Toulouse; O26c2 Riv & Nice carnival; O44 Marseille; My73 & My56 Camargue ranches; O78 Cevennes region(travel w donkey).
S73 & S23(89 il) Corsica.

History. Ja34c2 & N29c2 Amer battlefilds & memorials; Ja25c2 Versailles; N32c2 Compiegne & Joan of Arc; Je62c(pic map) in Crusaders' footsteps; D62(pns) & Ap70 Viking raids, mediev hist; Ag66 Wm of Normandy, Bayeux tapestry. *(See also above, esp Loire chateaux & Mt St Michel)*

FRANKLIN, BENJAMIN. Jl75(many old prints, map) feat on his life; F51c port by Peale.

FRENCH EQUATORIAL AFRICA. S38c2 pt *(See also AFRICA and newer countries: Central African Rep., Chad & Gabon)*

FRENCH WEST AFRICA. My41c2; Mr42; S38c2; Ag66 new nations in this region (New nations are, since 1958: Dahomey, Guinea, Ivory Coast, Mali, Mauritania, Senegal, Upper Volta.)

FROST, ROBERT. Ap76 RF & N Eng scenes.

FUNGI. *See MUSHROOMS, MYCETOZOA.*

FUR. *See INDUSTRY: ANIMAL PRODUCTS.*

GABON. S64 Peace Corps(brf).

GALAPAGOS ISL. *See PACIFIC ISL.*

GAMBIA. Ag66(brf), Je66 flag

GEMS. *See JEWELRY; MINERALS.*

GEOGRAPHY. *See PHYSICAL GEOGRAPHY.*

GEOLOGY. *See PHYSICAL GEOG: EARTH'S CRUST.*

GEO-POLITICS. S41 Atlantic; N40 Carib

GERMANY. Ag77(f) W Ger, contin econ miracle; Je59; D28c2; Ja49, O48 & Ja47 all reconstr; Ag33c hist & archit landmks

Sections. N46c Helgoland & Frisian isl, N Sea; My31c NW esp peasant costumes; Mr74(f) Bavaria (Alps, Munich); Je26c Bavar Alps & Mr33 towns in SW G & Aus; Jl65 & O77 Danube riv, Ger-Black Sea; S65 Neuschwanstein castle, Bav; Ap67(fdt, 3 pic maps), Je62 & Jl25 & Jl45 Rhineland; Ap54 & F35-2 duot, Saar; Mr23 Wends of Spreewald; Ag33 Baden; Mr32 women on boatg trip, G & Aus rivs

Cities. Ja70 E & W Berlin, F37c2, N51 & My49 Berlin; D61 walled-off W Berlin; Je33 Hamburg; Je36 Cologne; Ag33(40il) Freiburg; F26c Rothenburg; F57 & D31c Dinkelsbuhl; D35c2 Oberammergau & Passion Play; F15 Munster; My31 Strobeck, home of chess

History. Ag33c2 Freiburg & geni hist views; Heidelberg, Rheinstein castles, F57 & D31c mediev Dinkelsbuhl & F26c mediev Rothenburg; F15 mediev archit in Munster & elsewhere in G

GERMANY, EAST *(GERMAN DEMOCRATIC REPUBLIC).* S74

GHANA. *(Formerly Gold Coast)* S60 pt; Ag51 folk music

GIBRALTAR. *See SPAIN.*

GOLD COAST. *See GHANA.*

GRANT, ULYSSES S. Ap65 esp Appomattox

GREAT BRITAIN *See ENGLAND; IRELAND (ULSTER); SCOTLAND.*

GREECE. D30c4(3c), Mr40c 3(2c), Ja56, D49c, Ap38 & Ja41; Jl63(fdt) & O68 Athens & Acropolis; S16 Saloniki (wartime) & Mt Athos; Ja41(duot) G & Rhodes

N53c, F29c2 & N43 Crete; D58c incl anc Minoan relics & My44c & S15 Aegean isles genl; Mr40c Santorin & Mykonos; Ag72(fdt, maps) Cyclades & Dodecanese; Jl73(maps, drgs) Ionian Sea isles esp Ithaca, Cephalonia, Corfu, some archaeol; Mr53c & Ap41 Dodecanese & Rhodes; D47 postwar econ conditns

History. *(See also ARCHAEOL: GREECE)* Mr44c3 (32pn) anc G life; O64(pns) anc Olympic games; Ap67 anc Athens clock tower; My72 (2fdt pns, maps) anc Minoan civiliz destroyd by great volc erup, Thera, 1520 BC

GREENLAND. S75, O46c2, Mr26c, O51c pt, My43c, Je25, O49(Knutsen), Jl40 mod hist; S42c & S41; S34 as seen by Lindberghs; D73 Jakobshavn, its Danes & Gr'landers; Ap57c plants; My62 Camp Century & nuclear power for polar regions; Ag67(first woman) & Ja56 exploring & sounding ice-cap

GROSVENOR, ELSIE MAY BELL. 1878-1964. Jl65, Ag53(f) safari thru Afr

GROSVENOR, GILBERT HOVEY. 1875-1966. O66(pn) obituary article; O63 his reminiscences of Nat Geog Soc & magazine; color photography; Jl54 elected chm of bd; O53(f) by air in Peary's ftsteps to N Pole; Ag49c (port) 50th anniv as ed of NG

GUATEMALA. *(For Aztecs & Mayas see also ARCHAEOLOGY: GUATEMALA & MEXICO: ARCHAEOLOGY)* N74, O47c, N26c2, Jl45c, O36c2, Mr60 Easter Wk in Chichicastenango

GUERNSEY. *See ENGLAND:ISLANDS.*

GUIANA, BRITISH. *See GUYANA.*

GUIANA, DUTCH. *See SURINAM.*

GUINEA. *(Formerly French; indep. 1958)* Ag66, Je35

GUYANA. *(Formerly British Guiana)* N32 jungle veg & fauna; Je56 animals; Mr55 Wai Wai Inds; S20 headhunters & shrinkers

GYPSIES. *See ETHNOLOGY.*

HAINAN. S38 big-knot Lois(Chin isl)

HAITI. *See WEST INDIES.*

HEBRIDES. *See SCOTLAND.*

HEJAZ. *See SAUDI ARABIA.*

HENRY THE NAVIGATOR, PRINCE. N60

HISTORY. *(See also subh under major countries; also LITERATURE).* Ag74(5pn) anc Phoenicians; N77 megalithic monumts of Eur re-dated; My77 (8pn, fdt) anc Celts, artifacts & widespread civiliz; Ja68(fdt map; 6pn) in footsteps of Alex the Great; D62(20pn) Middle Ages: late Roman Emp & Constantine thru Dark Ages to Norman Conq; Ap70(4pn, fdt map) Vikings; Jl72(12th c map of Arab world) world of Islam; traditions, relig, art &c; D63c2(8pn) First Crusade & attack on Jerus(fdt pn); Je62 in crusaders' footsteps across Eur; D33c2 same, Balkans & Mid E; D56 in path of St. Paul, Jerus to Rome; Mr61 Viking towers; D77(pns, old prnts, map/pn supp) hist of Span trade & exploitatn of New World colonies 1494-1750 as seen thru wrecks of treas galleons; constr & attacks on galleons by privateers; My55 Bruges; Mr62 Karakoram, Genghis Khan's capital; Jl19 "progressive world struggle of the Jew" (W.H. Taft); Ap60(14pn) Khmer culture, mediev Cambodia; F55 mediev armor

HISTORY, MODERN.

World War I:

Allies' Struggle. Ja18 Fr, Brit & It aviation; Je18 leading air aces of war; O70 WWI aircr fly again; Ap17 Fr's burden; Ag65 Churchill in 2 world wars; Jl17 It front; Ap17 & Ag17 Russ situation; My17 US "armies of mercy"; O18 Red Cross; Jl18 Nat Geog Soc ward at Neuilly; D64 Jerusalem & nursing

Operations. *(See also U.S. ARMED FORCES)* Ja18 bldg US air army & our aviators; N-D8 battlefields of Lorraine; F19 & F20 N Sea mine barrage

Supplies. S17 "the winning weapon, food" by Hoover; Mr17 US food prod; My17 US "armies of mercy"; O18 Red Cross; F18 supplying our army in Fr; Ap18 Ger blockade & famine in Eur; N19 starving Armenia

Russian Revolution. *See RUSSIA: HISTORY.*

Postwar. Ap20 Salv Army around world

League of Nations. Ja19(W H Taft)
Rise of Fascism. F37c2 Berlin under Nazis; Ap72 Nazi exterm camp Auschwitz; F37 Sp Civil War; D38c2 new Palestine; Mr37c Rome under Fascism; S35 Italns in Eritrea; Mr40c3 It Fascism

World War II:

Home Fronts. S43c Wash, DC; Ap & O (agric)41, Ag42, Jl44(agr), Ag45(Lond) all Eng; Je44 Wales; Je43 Scot; N41 Canada; Ap42 Egypt; O42c2 US NW coast; Mr43 San Fran; Ag42 Baja Calif; O42 Hawaii; Jl44 It; Ag44 Low Countries; Mr43 Norway; D45 & Je46 Japan; Mr43 Sydney & Jl42 Darwin, Austl; N41 Singapore; N42 communic on home front, radio, wirephoto, V-mail &c
Internat. Relations. N42 Manchuria; Ap44 Japan & Pacif; O45 Russ & Lend-Lease; Je43 same & Eng; N45 Norway
Operations, Land. N44 infantry oprns, paratroopers &c; Jl43 Rommel's retr fm Egypt; S43 Sicily; N61 pt, Montecassino abbey; Jl45 Germany **Sea:** F43 convoys; Ag43c(16pn) Aleutians; Ag45 carrier Princeton; N43(f) pocket carriers vs subs **Amphibious:** O42 Dieppe raid; Jl69 Eisenhower; My59b D-Day landing, Normandy; Ja43 Gilbert isl; Ap44c(17pn) S Sea isl; Jl44 landing craft, assaults on Pac isls; Anzio &c; Ap45c & O44 isl strategy; O44c(19pn) Pacif war; N45c(17pn) Marianas; Je46 Pac isls esp Iwo Jima; Jl68 Iwo Jima revisited **Aerial:** F46c(f) aer bombg in WW2; Ag45c takeoff for Japan; Ag45(f) air war on Lond; Ja43 US Austl bombing bases; Ag61 naval aviation; Mr43 Malta; Jl43 blimp vs subs; US AF arnd world; Ja44 Dover; Ag44 Burma; My76 Jap ships sunk in Truk lagoon '44; Mr45c 8th AF in Eng; bombg in N It chfly bridges; Ap42 It naval base bombd; N46 bombg Helgoland, N Sea base; Ag45-China bases; Ja45(Taiwan harb), F45(Hong Kong), O44(Marseille), Mr45(Manila) bombings; D45 A-bomb hits Jap
Supplies. Ap43 food processg, US; My45 Normandy's pre-fab harbors; D45-2 oil & supplies; layg oil lines under Channel
Liberated Countries. My44 Ukraine; Mr43c3 It; Ap45 c2 Paris, also Crimea, Saipan & Tinian; Ja45 Paris; Mr45 Nancy; Je45 US rehab aid to Eur; Jl44 It; O48 Germany; O49 "Freedom train," US *(For War's results see sep countries in postwar dates)*
U.S. Armed Forces. *(For peacetime see main heading U.S. Armed Forces)* Jl41(f) Army trng; N44 infantry; Ag43 Yanks in N Ire, S44 GI's in Lond; Je41 Navy life; Ja45 at ease in S Seas; Mr45 hosp ship; Ag43 trng for surviv in Arc & Tropics; My45 famous survivals at sea; Jl45 GI's meet world's natives; O43(f) women in unif; S45 flying wounded home; Ja46 returning GI's; Ja48c (f) humor on WW2 bombers; N58 Arlington cemet rites; Je57-2 US WWII memorials abroad

Postwar. S61-3 UN; Ja47 fliers downed in China; D47 Lond postwar econ *(See entries noted under separate countries)*

Communist Front. My49 Berlin airlift; D61 walled-off Berlin; S74(f) contin reconstr, E Berlin; Je47 & My53c US Army in Korea; N50 Marines in Korea; Mr69 Panmunjom truce conf, Korean DMZ, S Kor home guard, UN graveyard; F53 Malaya "emergency"; Je55b, My54, S52c, O50 French battle in Indochina; Ag61 & Ja60 Laos; S64, Ja65, N62 (US helicopters) & O61 S Viet; S68 USAF rescues downed fliers; F67 & F66 riv war phot by Chapelle; Ap68 US Spec Forces aid Montagnards battling VC; My63 China-India war in Ladakh, Kashmir; Mr57 fleeing Hungary; Mr59 Quemoy under fire *(see also FORMOSA)*; D67 Israel-Arab war; Jl73 Cuban exiles in Miami

New Nations. *(End of imperialism; see also regional entries, e.g. INDONESIA, INDOCHINA)* Ag 66 Fr-peaking W Afr; N62 Cent Afr; N63 Malaysia; S72 Bangladesh

Other. Ap56 India's US-aided rural program; Ap & & Mr59 St Lawr Seaway & Great Lakes; Je59 Canada's queen; Ap74 Middle E (Yom Kippur) war of O73.

HONDURAS. Mr42c; Ag16

HONDURAS, BRITISH. *See BELIZE.*

HONGKONG. *See CHINA.*

HORACE. D35 the poet's countryside

HUNGARY. Ap71 Budapest & rural; Je32c3; Ja38c2 rural; Ap35 peasant costumes; Mr57 fleeing H; Jl65 pt H, Budap parliam bldg; D45 pt Budapest

HUNS. D62(pn)

HUNTING. *See INDUS:ANIMAL PRODUCTS; SPORTS.*

HUNZAS. *See INDIA.*

ICELAND. Ag69; N51c; N45c Reykjavik; Ap28-2; Jl41; F64 view of Reykjavik & Seljalandsfoss; Mr57 jagged coastal peaks; My65(6pn) birth of Surtsey volc isl; Jl73 (maps, fdt) volc erup threatens port town; My77 salvaging same town fm ashes; compar air views of Vestmannaeyjar

IMPLEMENTS. *See TECHNOLOGY, HISTORICAL.*

INDIA. *(See also BANGLADESH; BHUTAN; NEPAL; PAKISTAN; SIKKIM; SRI LANKA)* My63; Ap46c3(76il); Jl26c; D40c2 princes; F42 aristoc; O43(by Halifax); Ap56 village agric modernization; N24 genl & tiger hunt; Ag77(f) women in purdah; S76(f; fdt, coll pn) wildlife conserv; My53(f) sculpturd temple caves; Jl77 rats sacred & destructv

Sections. Ag52c & N55c(Hillary) & Mr32 pt, Himalayas; Jl54c(Hillary), O62(high alt tests & Ama Dablam exped) & Ag33(aerial conq), Ja61(Hammerskjold) & O63-3(Dyhrenfurth '63 exped) all Mt Everest area; O62 new school for Khumjung, Himalayan vill; O53c & Ja60 & Mr32 pt Hunzas; Ja73 Hunza centenarians; N58 & Ap48c & O29c2 & O56(Hindu pilgrimage) all Kashmir; My63 & My51c China-Ind war, Ladakh, Kashmir; Mr78 & My51c Ladakh, "Little Tibet;" O72 Punjab & Sikhs; O66(fdt;pns) Sherpas; Mr60 & Ja50c & Mr35c2 & O20(esp bldgs) & Jl57(coronation) all Nepal; N71 W Nepal's Karnali zone (or Tarai); O65 Mustang (state) in Nepal

F55c & F44 Naga hills & tribes; Jl45 N headhunter w victim's skull; Mr52 Assam-Tibet quake; My51c Little Tibet; Mr & N63 Sikkim protectorate; Je44 Manipur where Jap struck

O71 & O60 Ganges vall; N47c Delhi & O42c2 New Delhi; Ap73 Calcutta's crowded life; O70 Orissa state; F77(f) Rajasthan; Ja65 royal wedding, Rajasthan;

O48c Rajputana; My58 festival in Mysore; S70 cobra worship; Mr69 eleph roundup, Mysore

INDIANS, NO. AMERICAN. D55(8pn) Ice Age man in N Am; N64(pns) "Skraelings" battle Vikings Newf(?); My31 pre-Colum Inds excav., Lewistown, Ill; Ja15 status of I

Eastern Woodland. N37c2(24pn) eastern woodland I; S47(16 old engrav of E & SE I life); Jl47c NYS Inds in Am Rev; Mohawk vall; Je69 Mass I massacre Deerfield; Ja46c2(8pn) so eastern; Je79(pn) massacre of Eng colonists in Va, 1622; N69, D56 & Ja40 Seminoles today;N68 Choctaw dance, Miss; O56 & Mr58 (2pn), Ala, cave men, archaeol; Ag74 Menominees, Wis; Ap75(f) Canada's Crees; D78 & Jl63 pt, Cree, Ont; S63 Chippewa, Ont; Jl52(f) Mohawks bldg skyscrapers

Plains. Jl44c(16pn) Plains I; N65(old pns, prints) Plains Inds in hist of West; S27c2 Crow; My57 pt, Comanche, Kiowa; S71 Sioux reservation, Standing Rock, N D; Ja77 "medicine wheels," stone cairns in Big horn Mts, Wyo; Ag45c Shoshoni sun dancers, Wyo

Southwestern. N40c2(25pn) so western desert, D72(pns, map) & D58 Navahos; Mr63 mod Apaches & Navahos, hogan & interior view; Jl79(brf) Navajo Natnl Monumt & reserv life; S25c3 & D49 pt, Pueblos; S48c Mesa Verde; F64-2(7pn,pic maps) Pueblo & Hopi, Mesa Verde; N59 & Ja59 exped to restore Pueblo site; D29, Jl23, Mr22 & Je21 Pueblo Bonito exped (Nat Geog Soc) Hopi & Zuni I; Ap 64 & Ag57 Hopi dancers; My67 (3pn) the Hohokam, first masters of the Amer desert; Mr70 & My48c Havasupai (Utah); Je52 prehist towers of Hovenweep Inds, Ut; Ag72 Anasazi anc tribe of Escalante canyon, Ut; S52c archaeol in SW; Jl67 cliff-side dwellings & pre-Columbian pictographs, Glen Canyon, Utah; Mr54c rock carvings 10-15 cents old, Ut; O77 Inds on reserv, Ariz

Mound Builders. D72(pns, diagrs, map) Mound Bldrs fm Fla to Wis incl Etowa, Ga; Cahokia commun of 30,000(St Louis area), Hopewell culture in O, Serpent Mound, many oth; My32 Gt Serpent mound, Oh; Ja48 mound builders (Miss vall & Mex)

Western & Northwestern. F48c(16pn) far west; Ji33 Tacoma-Juneau, pt NW Inds; Mr77(f) Chief Joseph, hist of Nez Perce tribe; Ja45c2 (16pn) northwestern coast; Ap79(f) Columbia Inds today; Wascos, Paiutes, Warm Springs; Jl59 & Ag58 totem carving; F63 NW I war canoe & totem poles; Ap60 pt, Makah & Yakima; Je65 Tlingit types, dancers, costumes, totems; Mr72 Kwakiutl Inds at potlatch, carvg totems; O78 totem poles in Vanc mus; O40 totems in Sitka Natnl Monumt, Alas; Jl66 Chilkat dancers; Mr55(18pn) Ind style art; Jl77 Swinomish Inds' fishg rights on Skagit r; Ja77 fishg rights, Wash; F34 same for Umatilla &c, Or

Far Northern. *(See also ESKIMOS)* O49c(16pn) Kutchin, Naskapi, Eskimo, Cree, Yellowknives, Chipewyans, Micmac; O76 Slavey Inds of NW Terr, Can

INDIANS, SO. AMERICAN. Mr70, F41c2 & N41c2 Cuna, San Blas & Choco(Panama); N75 Cuna; D65 Carib, Dominica, W Indies

O50c2 Aymara & Quechua(Peru & Boliv); F66 Quechua (Bol); Ag42c2 Quechua & Chunchu (Peru); F71 Aymara & Quechua, Lake Titicaca(Peru & Boliv); D41c2 Quechua(Ecuador);-Jl45c & Mr60 pt, Quechua (Guatem); Ja55b(f) US couple live w Aymaras; Ja55 Aymara(Peru); F27c2 Aymara(Peru & Bol); F64 Shapra, Uru, Aymara(Peru)

O47c Mayas(Guatem); D75 compar of anc & mod Mayas(Mex); O36c2(Chiche, Solola, Cakchiquels, Tzutuhiles, Quiche - Guatem) *(For Aztecs & Maya see MEXICO:ARCHAEOL.)* O52c & My37 Tarascan(Mex); My27 Zapotecs(Mex); Mr37 Otomi flying pole-dance (Mex); My76(f) & Ag68 Tarahumaras, Mex long-dist runners; Je71 Cora(Mex); Mr63 Piaroa hunter w blowgun & poison darts, also Motilones & Goajira; O21 Jivaro head-shrinkers (Ecuador); F68 Quechua, Colorados, Jivaro, Cofan, Secoya, Cayapa (all Ecuador)

S52c Baniva & Cubeo(Colombia); Ap26-2 chiefly Mayongong & Maku, also Huitoto & Wai Wai (Amaz hdwaters); Ag76(f) Yanomano & N49c Camaracotos of S Venez forests; Mr55 Wai Wai & S20 Orecuna, head-shrinkers, both Brit Guiana; Ja79(f) Wasusus & Stone Age ancestors; O72 Machiguenga, Kamayura, Waura (Xingu), Txukahamei, Xavante, Kraho, all Braz; F75 Kreen-Akarores & Txukahameis, Braz; Ja66 Waura, Ja62 big-lipped Shukahamae & Suya, N77 Erigpactsa, My64 Erigbaagtsa, Mr59 Kraho, My59 Galibi, N59 Tukuna, Jl61 blue-eyed Javahi, N30 Arecunas, all last 8 tribes of Brazil; S68 Tchikao, Kuikuro & Waura in Xingu Nat Pk, Braz; S71 Cinta Largas in Nat Pk(Braz); Je57 Acawai & N32 Arawaks of Guyana; D32 Tehuelche & Ona of Patag & Tierra del Fuego; D37 Yahgan(Chile)

INDOCHINA. *(CAMBODIA, LAOS & VIETNAM)* S52c; Ap51c(21pn); O35c2; Ag31c2; S28c2; Ap60 & D59 Angkor Wat temple & Khmer culture; Mr71-3(4pn,fdts, diagr) hist, ethnol, art &c; Ap51(pns) racial types &c; Je55b, My54 & O50 curr hist

Kampuchea (Cambodia). O64

Laos. Ag61; Ja74 Hmong tribes; Ja60 communist front; My54c French battle Reds

Vietnam, South. S64 good aerial views; O61; D68 Mehong r, pt V; F66 Mekong delta wartime; F67; S68 & N62 US copters, & Ap68 & Ja65 US Special Forces; Je65 Saigon; N79(f) "boat people" fm V in Hong Kong

INDONESIA. *(EAST OR NETHERLANDS EAST INDIES)* My61; S55, Ja51c, Je38c, F46; Ja71, S29c2, My48 & Ja42 Java; F30c2 & Ja20 Sumatra; N69(fdt) Bali & native ceremonies; S63 & Bali & volc Gunung Agung eruptn(fdt map); Mr39c2, Mr28c & Mr51c pt, Bali; Jl40 & Ja45 Celebes; My41 Moluccas; Ag62 & S43 Timor & Lesser Sundas; Je72 royal funeral, Tana Toradja, Sulawesi; Ag31 Nias

INDUSTRY. *List of subheads used:*

Animal Products	Food	Publishing
Aviation	Forest Products	Rubber
Ceramics	Gas & Oil	Services & Misc.
Chemicals	Lumber	Shipbuilding
Commerce	Manufactures	Shipping
Communications	Metallurgy	Steel
Entertainment	Mining	Textile
Fishing	Paper	Tobacco
Flowers	Power	

For other occupational fields see AGRICULTURE, ARTS & CRAFTS, and other main headings.

D42c3(16pn) war production; D45c(16 pn) tech advances(heavy indus); O45 same (consumer goods); D51c Nat Bur of Standards; S62 Seattle World's Fair; Ap59 Gt Lakes cities; Mr49c ind in Dixie; Ag40c2 W Va; Mr54c Ga; Ap55 Ohio; My43(f) Russ indus might; Magnitogorsk; Ag44 women; Ag77 & F76 women in ind, Russ; D71 women in var indust, China; Ag74 N Kor indus workers esp women; Ja38c(f) women's work, Jap; D60 Japan; D70 effects of indus pollution; Mr77 anc Egyp occups w amazg mod parallels

(Note: As in ARCHITECTURE, many industries are treated in the general regional articles. Most of the following references are to small parts of articles only.)

Agriculture. *See main hdg*

Animal Products. Mr48 Amer furs; D76(f)worldwide threat of whaling; Sov whalg ships; F75(W Austl) & Je58 sperm whaling; D76(hand vs power harpoon) & Je59(Azores); S70 (Faeroe isl); Ja55(S Ga isl); Jl71 & Jl30 & Je24(Norway) whaling; Ap70 & N51c flensing whales, Icel; My49c same, Cal; F76 & Ja35 same, Azores; Ap31 whale catch, S Afr; Mr73(f) & My39 last US whalers, Alas Esk

Ja48c(Jan Mayen isl) & Jl29(Newf) sealing; Je49c seal oil, Newf; Jl52c hair-seal hides, Alas; Ja54c butchering seal & walrus, Bering Sea Esk; F71 huntg walrus, seal & polar bear, NW Territ; Jl52c sealskins for Esk goods, Alas; My64(Esk) ptarmigan & polar bear hntg, Can Arct

Ap69 Alas furs, many species; Ap75 mittens, moccasins, pelts of beaver, moose, fishg thru ice, Can; dressg carcass of moose (Cree Ind); S23 (Alas fox) & Ap23(wolf) furs; Jl68 polar bear rug; Ag55b skinng fox & otter, Can; N67 furs of vicuna, jaguar, puma, B Aires; Mr58 vicuna & fox furs, Arg; O72 jaguar & ocelot furs, Braz; Mr67 silver fox, Sib; Ag47 mink pelts for fur, Minn; S63 trapping beaver, Ont; Ap78 trappg muskrat, Yuk; S50c muskrat hntg, Md; Mr66 nutria; My49 & Mr48 chinchilla; D37 sheepskins dryg, Chile; S76 rich marine deposits guano for superphosphate, Nauru, Pac Isl; Mr59 & Je20 guano fertilizer, Peru; S70 eggs of sea birds gathered, Faeroe isl

Ja78 croc farmg, Fla; Mr58 allig bags, Arg; F55(Mor), S32(shark) & N62(ostrich) leather; Jl47 makg kid gloves, NY; D37 sheepskins dryg, Chile; Ap79 tanng lambskin, Mass; Ja40 parchmt & vellum, Eng; D56 tanners at wk, Greece; Je71 & F55 dyeing leath, Fez

F53c ivory tusks, Sudan; My50c culturd pearls, Jap; Jl51c(f) silkworm gut for fishg & sutures

Aviation. D53c3(2c) hist; F48, S50c jet aircr; Jl49 US air rtes; My 66 & O62 plane prod, Calif; N33 plane pl, Bflo; Ja77 Boeing pl, Wa; Mr78 Falcon jet pl, Ark; Ja18 plane bldg in WWI *(See also main heading AVIATION)*

Ceramics. *(See also ARTS & CRAFTS: CERAMICS)* Ja43c2 glass; S64 hist revealed in anc glass; N20 anc Chinese procelain ctr; Ap55 pt; N56 pt; Mr65 glass-plastic windshields, Pittsb & My19 Penna glass pl; S36 (Ind) & Jl35(Pa) gl pl; Ag40c(W Va) & Ap55(Ohio) glass blowg; My31 pottery kiln, Ill; S69 pottery factory, Ire; Mr74 gl blowers, Bav; Eisch Gl Wks, Ger; F68 Moser gl wks Czech; Mr40 gl blower, Murano, It; My68 Notsjoe gl factory, Finl (gl blowing); S69, Mr61 Waterford gl, cut crystal & engr gl, Irel; Ag76 Edinb glassbl; Ap63 Swedish glass blowers; Mr55 tile factory, Rio de J; Mr49c brick pl, Ga; Ap55 pottery pl (Ohio)

N56 pottery decoratg, N.Y.; F50c decoratg china plates, Oh; Jl35c(Pa) & F49c(Miss, by Audubon) china plates; Jl52 pntg Lenox china, NJ; Je51c pntg porcelain figs, Aus

Chemicals. *(For sulfur see also subh MINING)* N39 c2 plastics, synth, cellulose, casein & c; Ap63 Niag Falls polyurethane plastic, fiberfrax, ceramic insulations; Ja75 petrochem prods, Iran; ammonia, sulfur, urea, plastics; Je41c2 petrol chem prods; D47c sulfur, La; S46 sulf fm hydrogen sulfide gas, Ark; Ag77 Thyssen coke pl, Ger; Ap51 perfume; N65 benzoic acid foam, food preserv, St Louis; My32 soap pl, Oh; Jl52c sulf at duPont pl, NJ; Jl69 pharmac plant, Switz; F45 synth rubber; Jl51 cellulose sponges; D37, Mr30 & S22 nitrates & iodine, Chile; S76(f) Nauru, source of superphosphate fertil; My19 helium gas; Ap65 seaweed for fertilizer &c, Brittany; My69 sea water distill plant, Kuwait (30 mill gal a day); F45 magnesium fm sea wat; My75 perfume testg, Grasse; Ap51 perfume; F54c lilies for perf & Lili perf pl, Berm

Commerce. *(See also subh SERVICES)* N70 the computer revolutn; D37 Pan-Amer trade; Ja22 geog of our foreign trade, souces of materials, products &c; Je61 Lond banking & shipping; Jl64(NY), S64(Tokyo), Jl63 (Toronto), Jl69(Zurich) & N62(Johannesburg gold) stock exchanges; N60 Lower Miss cotton mkt; Mr66 GUM dept store, Moscow; My71 largest Leningrad food store; D59 Russ stores & floating mkt, Thailand

Ag68(Mex), S64(Boliv), F68(Ecua), N50 & O38c(Fin), D42(Russ), Je39(Yugo), Mr56(Sp), D68 & Mr65(Isr), F70(Leb), S68(Afg), Ja71(Java), My72(Egy) all open-air produce mkts; Ja76(Haiti) & N24(Tib) same, overhead views; Mr66(Russ), O24(Latvia) & O60(Ind) open-air bakery sellers *(for processing see subhd FOOD below)*

Mr67 large mkt, Guadalajara, Mex; Mr62 co-op supermkt, Mongolia; Je71 var of shops in bazar, Mor; My72 Egyptn gift shop(rugs, copper pl); D54c Pers & Cauc rug shop, Leb; F55 hat & pottery shops, Mor; D60 Jap silk store; S68 dyeing used clothg, Afghan; N74 jewelry & goldsmith shop, Flo; S79 gold mcht, Bahrain

O16 Florence wine mcht, Je70 Rome ham mkt, Ja77 old fish mkt, Seattle; My36 curb meat mkt, Fr; N64 Peking grocery stall; Ag66 & N63 Singapore foodstalls; N69 & Mr36c crabs boild in sidewalk caldron, San Fran; O44 fish stalls of old Marseille; Mr64 same, Yemen; D77-3c street fish vender, Jap; Ag41 olive oil & vineg sold fm burro, Port; O73 street peddlers, Istanbul; Jl73 & N41 selig food fm boat, Thai canal; My63 vagabond mcht, India; Je65 Saigon poultry shop; N52c basket & shoe stores, Pakis; F46 basket peddler, Indon; S78 broom & bask mkt, Damascus; D54c pastry shop, Damascus; D67 pastry stall, Jerus; O60 pastry, Sikh bazar

Je68 antique shop, Me; Ag37 old genl store, Kan; Je55 old country store, Shelburne museum, Vt; Je50c drugst of 1860's, Mt; Ag65 Amish plain stores, Lancaster, Pa; N70 country auctn, Ark; O39c genl store surviv of pioneer days, Tx; D64 Acapulco, Mex, open-air parakeet shop

Communications. N70(feat) computer revolution; N42(f) wartime communic: radio, TV, phone, maps, picts by radio, cable layg, V-mail; O45 TV b'castg, radar, short-wave radio for train engineers &c; My62 (pns; diagrs) Telstar satellites; D64 picture-phone tested at Nat Geog Soc Hq; Mr47c2, O37, Mr22(by Bell) & Mr16(hist) phone; O37 wirephoto sys, tel poles, NY 1887; D30 layg highest phone cable over Andes; O79 fiber optic technol for Ms of simult IR phone calls on light beams

Jl54c(pn,diag) how b'cast wks; tel office 1888; Mr49c live TV spot Tn; Jl47c TV studio, NY; O45 TV b'castg; F37 Berlin's 1st TV studio; N42 radio &c; S63 2-way radio of Austi frontier police

Ag75 Can Natnl TV Tower, Toronto; Ap66 under-sea use of TV, phone, motion pic, computers; Jl54c TV; O62 (pns) NASA Ranger 5 robot to moon; O66 TV b'cast of col phot of moon surface; Ap67 radar screen of Rhine traffic; Ag68 (f; many diagrs) crystals in mfr of miniaturized circuits for computers &c; Ap47(f) carrier pigeons

Construction. *See ARCHIT CONSTR METHODS.*

Entertainment. *(See also ARTS & CRAFTS PERF ARTS; MUSIC; SPORTS &c)* Ag63(f) Disneyland & his movies; My66 & Je54 movie productn; N34av Warner Bro studios; S70 movie sets, N M; F68 Czech director editg film; Jl54c TV

Mr48c & O31c2 circus; Mr72 Hoxie Bros old-time 3-ing circus; My63 & N24(Ind), F53c & N41c(Singap) snake charmers, cobras; F50c merry-go-round horses; Je66 same, Lond; O79 heads at Tussaud's wax mus, Lon; O64 Tokyo cafe; Mr70 geisha; Kyoto tea hse; Mr69 kisaeng houses, Korea; Ag66 hotel dancers, Chin opera star, Singap; O71 Miramar Thea Restaur, Hong Kong; Mr65 Pittsb Civic Arena, retract roof; S67 Jones Hall, Houston, Domed Stadium, live-stock show & rodeo; Ja77 Havana coliseum

AMUSEMENT PARKS. Ag63(f,fdt,pic map) & O62 Disneyland & his movies; N73(brf) W Disney world, Fl; D60 NY Cent Pk & museums; Ja63 Tivoli pk, Copenhagen, Den; Mr66 Gorky pk, Moscow; ferris wh &c; Je51c Prater pk, Vienna; ferr wh; N75 restaur & pk, Bucharest, Rom

Fishing. *(See also CONSERVATION; FISHES; SPORTS; WATER SPORTS)* Je16 US genl; D23c2(16-pn) N Atl food fish & fisheries; Ap78(f) Contin shelf fg; W Ger factory ship processg f at sea; fg flounder, Gulf of Me; My52c, S67, Je49c pt, Jl & D41 (all Newf & isl) & My67 & Ag35c2 (Gaspe) cod, some capelin, halibut &c; Ap68(f) & My52c(f) Portug f'men off Newf Grand Banks; Mr67 squid, Newf; Ja74 & Jl41 dryg cod, Newf, removg tongues; Ag57 lobster, herring, eels, skate(Nov Scot); D61 flounder & cod, Can; Ag67 cod-drying racks, Gr'land; Jl70 & S50c & Ag35 cod cleaning, Que; Ag66 fish drying, Chad; S52c pt, lobster, sardines(New Eng); Ap73(f,fdt,drgs) Amer lobster, growth & trappg; S68 lobster, cod &c, RI; Je68 lobster, herring netted, Me; Ap79 f bt, haulg net, clamdigger, Mass; Ag62 haddock, Cape Cod; Ap46 & F59 Me lobster; Je70 & F44 lobsters, Nantucket; Jl67 lobster pots, Scillies; S45c redf & D66 whitg unloadg, Mass, alewives fm trap, Me; O76 eelg & nettg baitf, Lower Potomac; D67(f) oystermen of Chesap Bay; Mr66 plantg oyst beds, La; N73 crab nettg, Va; Je77 clammg, Me; D62 clams, L.I; Mr47-2 shad in NY & Lofotens Norway cod; N60(La) & Je49(f) top US commerc f, menhaden; Ja44 menh haul, Fl; D73(Gr'land), Ag78(Ga), My57, Mr68 & O44 (Gulf); S37(Miss), F68(Ecuador), Mr79(Belg), Ag73 (Alg) & Je61(Thailand) all shrimp; Ap58 La crayfish; D31c red snappers, Ala; Jl69 yellowfins &c; Cal; S40 (Cal), N54c & Ja55(Sicil & netting techn), S64 (Md albacore); O66(W Ind) & S60(Ghana) all tuna; Ja76 f'g bts, Haiti; F58 & F36(Baham) & Ja47 & Ja30(Fl) sponge; Ja71 shrimp & sponge, Key West

O38c2(pn) Pacif coastal fish; N72 rockf, Cal; Ap58 salmon, Dungeness crab, Br Col; Mr72 & Je65 salmon, NW Ind, Alas; N52c Inds nettg salm, Wa-Or; F79 crabs, sole, pollock, Alas; Jl52c Esk dryg salm; F71 char f, Esk; N77 Esk dryg char, NW Terr; D60(Jap) & O66(W Ind) crabs; Jl59, Je56 & Jl52c Alas salmon; S42 salm, king crab, Alas; D74, N52c, O26, D46, & Je41c Columbia r salmon, Ja & Jl77 Inds nettg salmon & trout, Wash; F33 trappg salm, Wa; Jl60 lake herring; Alta; Mr69 whitefish, lake Mich; N73 shark, Mex; Jl78 perch & drum fg, Lake Erie, Oh; & Jl41

Mr67 gathg nets, Mex; O77 nettg, Domin Rep; Ag76 f'men nettg on seashore, Venez; Ja31 pentrap, Braz

Ap63 Swed herring harv; Ag69 & N51c nettg & packg herring, Icel; N51 drying cod, Icel; herring catch & fish mkt; F15 N Sea cod, herring; Ag34 Yarmouth, Eng, herring; S74 cockle-digging, Eng; Ag64 silver eel, N Irel; Je37 Brittany mussels, sardines; Je24 cod, whaling &c Norway; Jl71 & Mr47(f) cod, Nor; My35 nettg salm, Nor; My68 netting muikku, Finl; Je63(octopus, mussel) & O59 & Ja35(anchovies) Italy; O65 fishing scenes, gear, boats, giant lobster, Portugal; N54c(f) fg villages, sardines, nettg tuna, Port; My70 sardines, Yugo; Ag72, D30 & My44 sponges, octopi, Grk isl; F76 sldg tuna to mkt, Azores; Ja55(2b,diag) nettg tuna, Sic; octop, harpoong swordf; Ag73 shrimp, sardines &c, Alg; Ag64 mending nets, Marseille; Je67 same, Cannes; Ag68 boats drydocked, Basque land; Ap50 turbot & crab, Sp; Ja61(Iran), Mr40(Rumania) & Jl42 & Ja22(Russ) sturgeon (caviar) &c; Ap71 foga, Lake Balaton, Hung; Mr62 whitef, Mongol; O67 sardine harv, Arabia; Ag79 barrac, Yem; Mr63(Venez), N37(Red Sea) & F26(Ind Ocn) pearl fishing; Ag67 & Ap62 mother-of-pearl, Fr Polynesia; N68 tiger prawns cultiv pearls, Austl; Ag66 weirs to trap f, Singap; S66 net rigs, Philipp; f'ing in dugouts, Philipp; My67 casting net, Micronesia; O64 trapping f w nets & bamboo weirs, Cambod; F76 nettg, Sib; Je74 nettg f, Burma's Lake Inle; Jl67 Thai girl netting f; Ap68 primit f'ing methods, Viet; N59 green turt, Seychelles isl; Mr61 & S32 shark; Jl71 women dive for abalone &c, Japan; S67 octopus &c, Jap; My72 tamori & tai(sea bream) Jap; Mr68 Tongans f for octopus; Mr69 drying squid, Korea; Mr70 & My50 & Mr33 f'ing w cormorants for aigu, Jap; Ag42c spiny lobst, S Af; My67 moray eels cooked, Pacif isl

Flowers. *(See also PLANTS)* My68(feat) f seed business, US (fdt pn of 117 f); Ag72 creatg hybrid rose; S33c2, S54c & D50 Holland; D50c hyacinths, Holl; My78(f,pn) & Ap68 tulips, Neth; F33c same, Wash; D79 & D46c tulips, gladioli, Or; O42 tulip & daffodil flds, Wa; F33 Seattle f shop; Ap38c2 Belgium; Je66 gladioli field, Fr; My71 1100 acres of f & fruit in green houses,

Guernsey; D38c daffodils, narcissi in hot hses, Scillies; F54c lilies for perfume, Bermuda; Je63 carnations &c, It Riviera; Ap51 carnatns for perfume, Fr; N59 & My49 begonias, rhododendrons, Cal; N34c anemones, Cal; Jl32c lotus blossms, Col; Ag39c phlox, Ia; Mr52c Holland, Mich; tulips; S31c gladioli, NH; Ag68 marigold, Mex

Food. *(See also AGRICULTURE and PLANTS)* Jl75(f, pns, drgs, diagrs) basic foods of man & prospects of feedg future pop; Mr42c2 Amer foods; Ap43 wartime food handling; Ja16 "how world is fed," WWI period; F18 Allies' food problem; Ag18 dehydrating food for army; S58 gamma-radiated food; Ap59 transport of wheat; brewery; Jl41c2 Pa Dutch home-made foods

Jl37c2 gen'l & cheese & Je47 Wisc cheese; Mr42c cheddar ch pl, Wi; D46 ch aging, Or; N58c & S49c cheese, Minn; Mr35 butter pl, Mn; Ap55 ch makg, Oh; Je76 "Swiss" ch, W Va; S54c & D50 Dutch ch; Ap68 Edam & Gouda ch, Neth; Je66 hand-made ch, Fr; Jl51c Roquef ch, Fr; Ag36c(f) Gruyere ch, Switz; Ag50c, O56 ch, Swit; Ja23 goat-milk ch, Sardinia; Jl73 feta ch, Ithaca, Gr; S51c home-making c'n, It

N69 aging red wine in lime'tone tunnels of Calif winery; My41 sherry aging in casks, NY; F77 bourbon distill, Ky; Je66 Vouvray wine; F53c hand-op wine-press, Fr; F76 old wood wine-pi Azores; Jl72 Paris wine-cellar; My73 casks holdg 500,000 gal vin des sables, Fr; Je68 wine prod, Vienna; Ag77 wine productn pl, Ger; Ap71 tokay vineyard & cave, Hung; N67 Austl winery; Mr78 sherry aging, Sp; Mr56 wine aging, Pyrenees; Ap73 & Mr59 Madeira wine; D65 rum, Martinique; Ja53 Angostura bitters, Trinidad

Je58 sail-driven grist mill, Azores; S62(Braz) & Mr64 (Yemen) coffee productn; Ap65 coff sorting, Ethiop; F61 coff processing, Haiti; My39 coffee tastg, Braz; Jl65 curing coff beans, C Rica; Ap66 tea picking, tasting, Ceylon; Ap73 tea tastg, Calcutta; Ap41 same, Md

D63 citrus canng, Fl; D46 canng cherries, Or; My54 & O38 pineapp packg, Haw; Ap52 canng aspar, NZ; Mr42 processg tomat & tom jce, Md; Ap71 packg paprika, Hung; N44 processg coconuts, Phil; My49c packg dried fr, peelg pears, Cal; Mr65 & My76 processg olives, Spain; S51 same, Cal; My41 sauerkraut, NY; S56b(f) truffles, Fr; Mr78(Ark), Mr54c(Ga), Mr65(Heinz, Pittsbg) pickig

F41c mayo & s'wich spread, NJ; F78 & D47c tabasco sce, La; Ap65 seaweed for gelatin, Brittany; F69 & Mr54c coca-cola & peppermint; Mr49 jelly bean pl, Tn; margarine vat, SC

S49c bread & butter testg, Mn; Jl41c & Jl35 pretz bakg, Pa; F40 bakg bread (sevrl views), Fr; Je51c pastry sculp, Aus; Ag72 bake oven, Aegean isl; D54c Damascus pastry shop

Je67 sausage packg, Ill; D53c Swift mt proc, Ill; Mr42 proc var mts & fish, sausage, ham, US; My45c meat packg pl, Neb; My47 smokg bacon, SD; Jl38 smokg Smithfield ham, Va; N60 smokg hams, Ky; F70 meat testg; O42 sun-dryg beef, Braz; Ja44 beef for export, Braz; S70 dried mutton ribs, Faeroes; Ja51c wiener wurstel shop & pastry sculptor, Aus

D47 dryg cookd shrimp, La; Ja44 processg shr, Tx; Mr66 La crawf; Ja69 salm cannery, Or; F33 same, Wa; D46c canng salm for sportsmen, Or; F79 salm roe packd, Alas; S42 froz salm stord, Alas; Mr51c froz duck, L I; S45c ice-packg lobst, Mass; S50c & Ap41c canng crabs, Md; N73 sortg shrimp, Mex; Je66 fish sce for canng, Fr; Ag54c canng sardines, Nor; F74 dryg smokd herrg, Den; My73 packg caviar, Volga delta; Je61 dryg cookd shr, Thai; Jl67 collectg bird nests for soup, Thai

Forest Products. *(See also subh LUMBER)* Ap54c (f), Jl74, Ag67, My51c & Ap43(all Vt) & Ag70(Mass) maple sugar; Mr54c pitch pine; My34 turpentine, Ga

Fur. *See subh ANIMAL PRODUCTS.*

Gas & Oil.

OIL. Ap78(f,maps,diagrs) o & g exploratn on Contin Shelves, US; Je74(maps,diagrs,charts,pns) world productn & consump in desert, arctic, offshore; O75 transformatn of Arab world thru o exports; locatn of resources; Je41c2(diagrs) o & its applics; how drilld; F20 world o sources

Jl78(f,fdts,drgs,map) supertankers; constr & rtes; F79av tanker leaves Valdez, Alas; Ap69 offshore drilig, N Alas; Jl59 oil rig, Alas; N76(f,map,fdt,pn & diagr) Alas pipeline constr probms; Je75 Alas pipeline (fdt map of all areas); O76 o & g drilig, isl off NW Terr; bldg isl base, pipg probms; Mr70 tanker icebreaker on NW Passage to Alas N Slope o flds

Jl60 o prod, Alta, refin, pipeline, well; Jl68 explorg for o, Alta; S67 o derricks, rocker pumps, Tx; Ja44 o well, Aransas Bay, Tx; Mr66 offsh prospectg & drilig, La; D47c refin & storage, La; F71 petrochem complex, N Orl; Ap55b refin, Oh; Je78 tappg home well; stor tanks, Pa

Ja53c drilig & refin, Trinidad; pitch lake of asphalt; barrelld asphalt; Ja70 & F43c Esso refin & stor, Aruba & curacao, DWI; O61 refin, Mex; Ag76 hunds of derricks, Maracaibo Lake, Venez; Je30 o fld & refin, Peru

Ap77(f,drgs,diagrs) N Sea o drilig; o refineries, Scot & Nor; D45 layg o pipeline acr Eng Chan; N75 refineries, Ploesti, Rom; F76 pipe fm Sib o fld;

Ja66 & Ja60 Ras Tamurah refin, S Arab; My69 o port, Kuwait; S79(f) Bahrain's o econ, well & refin; Ja68 (Iran) & O58(Iraq) o fld towers; Ag55 undersea prospectg in Pers Gulf (Cousteau)

GAS. N78(f,fdt,pns,diagrs) meths of searchg & squeezg more g fm earth, O51(f) natural g; Ag55 layg g pipeline, Alta; Ag66 g pocket burns out, Wy; S70 nat g pl, El Paso, NM; Ap68 fabul g well discov in Neth (trill cu yds)

My19(f) helium deposits & refing, US; Jl76 extractg g fm coal at mine

Hunting. *See subh ANIMAL PRODUCTS.*

Iron. *See subh STEEL.*

Leather. *See subh ANIMAL PRODUCTS & main hdg ARTS & CRAFTS: Leathercraft.*

Lumber. Ap74 Timber - how much is enough? our l needs & how met; scient meth of producg & handlg l; leadg Am trees, &c; Jl51-2 uses of wood & ld loggers

Ap58 wood prod of Br Col, Can; Mr72 felig giant Sitka spruce, 20,000 tons logs fm self-dumpg freighter, B.C.; Mr59 pulpwd carrier dumpg cargo, Que; Jl60 Alta spruce, pine; Jl59 Alas wood; Je65 Sitka spruce, Alas; Ja69 log raft, Colum r, Ore; F33c(Wash), D79 & F34

(Ore) & F35(Que) logging operns; O75 tree-chompg harvestr of southern pines; N55(16pn) northern state trees; My67 l'ing with tractor & tugbt; S56 lumberg in natl pks; D74 huge log rafts, Columbia r, Wash; Ap60 l transport & sawmills in NW; Mr73 log tows, Id; Je50c same, Mt; S77, My66 & Jl64(felling & handling), N59 & F39c2 & Mr36 redwood; D46c bringing redwd to mills, Or; Jl51 sawing sequoia in half on ground; Ja77 & Je41c Douglas fir & D46c ponderosa pine; F33 cuttg veneer, Wash

Mr59 pulpwood transport on Gt Lakes; S56 same floatg, Lake Sup; Ag32 floatg logs, Ont; Ap77 mt of pulpwd Saguenay r, Que; Je77 huge log drive Kennebec r(now stopt by envir laws); Jl77 same on Skagit r, Wash; Je68 riv driver at wk for pulp & l mill, Me; O46c (C Rica) & D41(Ecuador) balsa; O46 10' balsa plank held by child, C Rica; Ja41c handsawg logs in plants, St Lucia; S66 (Philipp) & Ag44c (Nicaragua) mahogany; O43c2 (Paraguay) quebracho & oth hardwds; O73 cuttg oaklike roble wd, Chile; Ap63 spruce & pine, Swed; My68 rafts of pine & birch for newsp & furnit, Finl; O24(Latvia) l'ing & transp conifers; Je69 raftg logs, Rumania; Ap42c(eucalyptus) & S63(giant karri) Austl; Ap70 cuttg Monterey pines, Austl; Ag30(f) & F63(Burma), My34(Thai) & D59(Singap) teak; F72 eleph pilg teak, Thai; Mr67 lady l'jacks; Mr63 prim l'ing methods, Sikkim; Ap47 Gls l'g in Jap; Je35 red mahog logs, Rhod; Ag69 felling trees, Swaziland

Manufactures. *(See also main hdgs ARTS & CRAFTS; TECHNOLOGY, HIST; WEAPONS; also list of subhds at head of INDUSTRy entry)* D44c2(Gt Lakes region), Jl47c (Cent NY), S38(Ct), Jl35c2(Pa), D53c(Ill) & F45(Tex) all miscell; Ap47c2 steel prods; N40 tin can pl, Ind; Mr43 munitions pls, Austl; Ag38 Skoda munitns wks, Cz; Mr52c furnit, Gr Rapids; S31 native indus, NH; Jl51 multiple carv machines; matches; Mr54c baseball bats, Ga; N65 shoes, rapid transit cars, airplanes, St Louis; Jl47 locomotive blt, NY; Ja51c insulated wire, dyeing shoe leath, Mass; Jl49c shoe heels, soles, Va; Mr47c2 & Jl54c phone & communications; Ap70 phonorecords, Va; Ag70 power transformer, GE pl, Mass; Ag68(f; many diagrs) use of crystals in indus, chfly communicatns; Ag76(Venez), Jl74 & Ag67 computer circuit units, Vt; My63 auto phones, Ind; D44c army ambulances, Detr; Mr49(Ga), Ag77(VW) & Je59(Ger), Je49(It), My73(Russ), Mr65 (Isr), N64(China), O64(Jap), Ap65(Fr), Ap70(Austl) cars & trucks; Ja69 Philco Ford, Tatung Elec plants &c, Taiwan; Je67 Caterpillar Tractor pl, Ill; Je67 & D53c(2p) Internat Harvester wks, glove pl; My70 agric machinery, Yugo

Je67 nail machines, Chic; S68 machine tool factory, RI; F68(Czech) & Mr65 turbine generators, Pittsb; Mr45 & O40 hemp rope 4" diam, Manila; Ap74 & Ag50 old ropewalk, Eng; & Ag68 same, Mystic, Ct; Ag47 same, oldest in US, Plymouth, Mass; Ap39 same, L I; Ag64 cordage, carpets, cigarettes, N Ire

Mr49c radio sets, SC; N64 girls repair radio, China; S47(f) clocks & watches, hist & mfr, clocks; Jl69 watches, Switz; D53c TV sets, Chic; Mr77 electronics pl, Egypt; Mr74 & Mr70 color TV & O64 miniat TV, Jap; S75 electronic computrs, S Kor; Mr63 computers, missiles, Ariz; D50c & Ag48c jewelry; N56 candles, NY; Ja51c engraving (chasing) silver, Newburyport; Jl49 cabinetmaker, Va; heat-enamelg bath-tubs, Pa; F74 Danish furnit designr; Ap67 scissors stamped in cutlery wks, Solingen, Ger; Jl47 sportg guns, NY

Metallurgy. *(See also subh STEEL & main hdgs ARTS & CRAFTS:PLASTIC & TECHNOLOGY, HIST.)* Ap42 many alloys; F60 & S22 copper, Chile; Je69 & S63(Austl), Mr63(Ariz), Ap64 (Ut, Mont) & D61 (Queb) My68(Finl), N71(Uganda), N68(Austl) all copper; S33 lrgest nonferr copp smelter in world, Mt; Jl47c copp pots &c, NY; D66 coppersmiths, Baghdad; Je50 copp mill, Mont; Ap70 brass foundry, Va; Ag58 lead refinery, Br Col

Ag78(f;pns,diagrs) aluminum: mod uses, refing bauxite & smeltg; F62(Yugo), Mr63(Ariz), Mr59(Can), Mr67 (Siberia), N68(Austl), Ag66(Guinea), N52c(Wash), Ja68(Virg isl) & Ap58(N Orl) aluminum; S46 pourg alum ingots, Ark; My43 alum bars at pl, Russ; Jl71 huge alumin smelter, Norway; F53c alum & tin pl & pigs, Singap; Ja74-2 (f;fdt;diagrs; 12 portfolio) gold refining, smithg & art objs; Ap33-2 duot, gold; My47 molten g bricks, Colom; F56c g furn, Austl; D42 & Ap31 g bars & ingots, S Af; S33 silver; D36 silv & lead refin, Austl; S37 platinum; O54c uranium; N63(Malaya) & N40 tin; F45 magnesium, bromine fm salt water, tin smelter, Tex; Ja69 zirconium ingot, Ore; N69 weldg underwat tunnel sectns, San Fran; Ag69 crushg molybdenum ore, Col

Mining. *(See also subhd GAS & OIL)*

METALS. S60 & Mr52 Congo tin, copper, gold, uranium, radium &c; N68 vast ming complex, Austl, for lead, zinc, silv, copp; Ap64 copp, Ut & Mt; My76 mile-wide pit copp mine, Minn; S53c(Ariz), Ja46c(Nev) & My36(Ut) open-pit copp mis; Ap75 lgst & most product US o-pit copp m, Salt Lake City; O79 test-drillg for geologists, lg copp m, NM; O73 one of world's lgst o-pit copp ms, Chile; S66(Phil) & Mr65(Isr) copp, & salvag minerals fm Dead Sea

O54c uranium around world; Ap66 o-pitt uran m, Wy; O72 mercury, Sp; Jl68 uran & asbestos, Sask

S49av world's lgst o-pit iron m, Mt; Ap47c Mesabi m & o-pit, Minn; Mr63 iron, Venez; O48c mt of solid iron ore, Braz; Ap63 o-pit & subterr iron m, Swed; Ag69 o-pit iron m, Swaziland; F75 o-pit iron m, Austl, 4 mi long mt of ore, 130M tons/day; N44c iron, Phil

F66 & Mr43 tin, Boliv; Ag61 tin, Cornwall, Eng; F63 tin mined by hydraulic jet, Burma; My77 world's lgst alluvial tin fld, Mala; Mr52 strip-mg tin, Zaire

S56 aluminum hydro pl & smelter, Can; D67 & Mr54c bauxite for alum, Jamaica

Ap78av lrg o-pit lead & zinc m, Yuk; Ap23 lead, Mo; Ja44c2 manganese, iron, quartz &c, Braz; Ja77 nickel strip-mg & refing, Cuba; D74 strip-mg nickel, New Caled; Ag69 molybdenum, lgst undergr m in N Am, Col

My68(f;drgs) Carlin gold m, Nev; extractg process; Ja74-2(chfly S Af), Ap33-2 & Jl59 gold; Je74 rewkg Nev gold flds; Ag 69 Col gold panner; Ap78 panng & sprayg for gold, Yuk; Jl36(ld) & F34(Or) panng for gold; S33 silver; S37 platinum dredging, Colom

NONMETALS. Ag75(pns), My44 & N18 genl arts on coal; Mr75(NS), Jl35 & My19(Pa), O75(Ala), Mr49(Tn) all scenes of subterr m; Je76 subterr miners, WV's 1st woman miner; D53c & My31 strip-m, Ill; My & Jl76

same, Mt; Ag45 huge open-pit m, Wy; Je65 miner & Je44 wartime colliery, Wales; Jl48 m deep in Spitzbergen mts, Nor; Ap54 (sevrl views) subterr m, Saar, W Ger; Ag77 world's lrgt opencut brown coal (lignite) m, W Ger; S74 lignite m, Ger; Ja32 strip-m, Manchuria

My51c & Mr61(Ire), Mr68(Scot), My70(Hebr), Ap77 & O53(Shet) & Mr54(Den) all peat bog operatns

Jl74, Ag67, Je55 & My51c Vt marble & granite; My39 (Tn) & D31(Ala) marble; Ag41(NC) & Mr35(Minn) granite; N74 m quarries, Carrara, It; My32 sandstone for grindstones, Oh; Jl49 limestone quar, WV; S36(In) & Je69(Malta) same; Mr52 & F39 coral limestone blocks sawd, Berm; Jl42 asphalt rock quar, Ky; O76 world's richest opal fld, S Aust'l

Ap58(f) diamond; Mr73(Zaire) & S61(Angola) diam; Je68 fm sea floor

Mr54c & Mr49 kaolin clay, Ga; Ag61 same, Cornwall, Eng; My49c borax, Death Vall, Cal; Ag35 gypsum desert, NM; O46 carnellite for potash, Isr; O70 potash, Sask; Jl68 asbestos, B.C.

Mr66(offshore), F71 & N70(La), S42(Alas), O61(Mex), & S24(Sic) all sulfur

S77(f, old pr) salt productn worldwide & thru hist fm early Celts to Bali, mng, surf cuttg, evap &c; Ag37 (Kan), Ag38(Cz) salt mines; Ag66(Timbuktu) & N65 bilma salt pits in Niger desert; N67 carv salt fm open mines, Sahara; Ap65 salt & potash fm desert, Ethiop; N69(Calif), D44(Mich), Ap70 & Ap65(Brittany), Ap51c (P Rico), F61(Haiti), F70 & O54c(Leban), F58(Bahamas), Ag70(Colombia), S24(Sicily), Ja69(Canary isl), D44(Isr), F70 & S35(Ethiop), O67(Ind Ocn), N53(Jap), F75(W Aust'l), S66(Philipp) & S44(China) all salt by evap fm sea water

Misc. *See SERVICES & MISC.*

Paper. *(For raw material see also subhd LUMBER)* Je49c(2p) & D61(2p) mts of pulpwd at Bowater's pl, Newf; Jl63, S66, Jl60, My39 pulpwd & logs for p pl, Can; Ag78 logs & wood chips unloaded at world's lgst pa mill, Ga; Ag41 pulpwd from Fla-Can for p, NC; Mr68 sprayg lumber at p pl, Mobile; Mr49 bin of chippd wd for pulp, NC

My35 shreddg fibers for p, Me; N52c cookg pulp for kraft p, Wa; Ja51c cookg pulp & cuttg p, Mass; Ag70 fine cotton rags for hi-qual statnry & US currency, Mass; S31 machine rm of mill, NH; Jl37 p'makg rollers in pl turng out stock, Wis; F45 hi gloss p on rollers, Tex; Mr49 cig p productn, Ga; Ap74 mammoth rolls await cuttg into business statnry; D31 kraft p stackd, Ala, & Mr49 same, Ga

Power. *(d = dam)* N72(many diagrs, drgs) survey of all modern sources of p prod & future potentials (fossil fuels, hydro-elec, nucl, geotherml, solar, wind); N48(f) electricity

Ap48c d-made lakes of Tenn; Jl42 Gilbertsville, Ky, d; My39 Norris d, Tn; O76 Bloomington, W Va, dam in constr; Je41c Colum r; N52c & D46 Bonneville d, Col r, Ore-Was & Grand Coulee d, Wash; S46 & Je41(under constr) Gr Coulee; Mr54c Allatoona d, flood control & p, Ga; My68 Ross d, Wash, 540 ft high; Je54c & N46 Shasta d, Cal; O73 Davis d, Cal; My66 Oroville d to be nation's highest, Feather r, Cal; Je51c, D48av, Ja46 & Je40av Hoover(orig Boulder) d, Nev-Ariz, & N34 same under constr; Jl67 & Ap64 Glen Canyon d & Lake Powell formed by Colo, r, Ariz-Utah; D45c Roosevelt hydro d, Az; Ap66 Dave Johnston power pl, N Platte r, Wyo; Je50c Kerr d, Flathead r, Mont; F45 Ft Peck & Grant Falls ds, Mt; Je50 constr Hungry Horse d, Mt; S51c Garrison d, ND, world's lgst earth-filld; Ag32 Chippawa-Queenston, Ont, hydro pl, lgst power devel on earth; My67 Manicouagan 5, world's biggest multiple-arch buttressed d on M r, Que; Jl68(pns) Bennett d, Peace r, B.C; S56 Kitimat, Can, d & hydroelec pl; Ap51 Caonillas d, PR; O36 Santa Maria d, Guat; N48c Rincon del Bonete d & hydroelec proj, Uruguay

Ap65(pn) Rance r estuary d harnesses tides, Fr; S78 generators for hydro pl on Euphrates, Syr; F68 constr of generator, Pilsen, Czech; Ja70 3.6 mill volt testg generator, Berlin; Je51 Kaprun d in Aus Alps; Je69 Turnu Severin d, Danube, 182 ft high; S36 hydro pl, Lake Garda, It; Ja39 Cubuk d & lake, Tur; Ja75 & Ja68 Mohammad Reza Shah Pahlavi d, Dez r, Iran; O60 same, Bhakra sta in Punjab, Ind; O70 Mahanadi r dam, Ind; Mr67 Bratsk d harnessing Angara, Sib, world's largest hydro-elec proj; My63(fdt) Krishna r d blt by manpower, Ind; N62 & S60 Kariba d on Zambesi r, N & S Rhodesia; O63(pic map) Aswan d, Egypt; My69 Lake Nasser rising, Aswan d; My55b Aswan fm air; N71 & My55b Owen Falls hydroelec d, Uganda; D42 Klip power sta, Johannesbg, S Afr; Ap31 Hartebeestpoort d, S Af; N67 & S63 Snowy Mts hydro-elec scheme, Aust'l; D56 Tarraleah p sta, Tasmania

O77(f, pns, diagrs) geothermal energy; world map of continentl plates; geother heat used in Jap, Cal, Ut, Col, Icel, Azores; Ag69 & N51 & N45c harnessing steam of geysers, Icel, for heatg city & growg crops, My77 geoth ht fm lava, Icel; My66 geyser power for generators, Calif; O79 bath in hot spr creek, Wy; D51 & N74 volc steam driving generators, It; Ag74(tamed geysers) & Ap62 geothermal power proj & F36 cookg, N.Z

Mr76(f; diagrs, map, pns) solar energy, tech of collectors, home use, ocean power pl, &c; N65 & Mr56 solar furnace, Pyrenees, & Je60 Algeria; Mr65 solar heaters, Isr

Ap79(f,prls, diagr, maps) promise & peril of nucl energy; diags of nuc pl, recyclg uranium & nuc fusn, map of world's n pls, &c; Ja54(f) Oak Ridge, Tenn atomic power pl; Mr53 AEC's Savannah r pl, S.C. for mfr of hydrogen & atom bombs; S58 atomic power plant; My62(f) nucl power pl under Gr'land ice-cap; N70 AEC productn of nuclear fuel, Ark; Jl69 nucl reactor core in lab test, San Diego

D75(f,2 pns,drg) harnessg power of wind; Jl76 coal conv to gas in mine (experim)

Publishing. *(See also WRITING)* Je67, D60 & D61 Nat Geog Mag; Je63 its atlas; N75 examples of printed & illus bks in Lib of Cong; Jl52c engr col plates, Phila; Mr45 newsp press, Manila; O20 Jap newsp; Je27 type cases & newsp composg rm, China; Ap39 linotype mach, B'klyn; Je58 hill country printer; F55c Worcester's first newsp press, 1775; O54 colon Wmsbrg printer; F55 pt, early Amer; Jl75 Franklin & early Am prntg w examples; Ja19 examples of 15th cent prntg; D58(5pn) productn of Dead sea scrolls; D62(pn) mss prod in mediev monast; D27 Arabic & Hebrew scribes, Jerus.

Rubber. F40c2; S60 & F48c Liberia; O72 & S62 har-

vesting in Braz & F66 latex ball in jungle, Boliv; O42 Ford plantatn, Braz; Ag44 Nicaragua; My77, N63 & F53 Malaya plantatn & warehouse; My61 & Ja51 sheets of raw latex & processing, Sumatra; D68 & O64 tapping trees & packing bales, Cambod; Ja71 gathg latex & S55c r productn, Java; S52c r plantatn, Viet; Ag66 bales of Malaya sheet r, Singap; F42 tree-tappg taught & N44 sheet of r, Phil; F45 synthetic, Texas

Services & Misc. My51c Irish tinkers' caravan; D79(Or), Mr34(Lon), Ap67(Switz), S74(E Ger), Ap54 (Ger), O77(Czech), & Je68(Vienna) chimney sweeps; S37(Miss) & S69 & Ag43(Ire) blacksmith; My41 same, Finger Lakes, NY; N47 itinerant barber, India; Je68 barbershop, Me; F76 waitg rm/day care cen, Sib sta; Ag69 pub bath fed by hot springs, Icel; S50 & F35 cuttg & haulg ice, Can; F76 stackg lake ice, Minn; Ja55 cuttg snow fm under Etna's volc ash, Sic; Ag46 pub scribe, China; Mr49c day nursery, SC *(See also MEDICINE)*

Shipbuilding. *(See also main hdg SHIPS)* Jl78(f,fdt, drgs,map) supertankers: constr details, rtes; Mr70, S67 & D60 same, Jap; My42, Ja60 nuclear-powered mcht ship; Mr69 Navy mine-sweeper in constr, Wis; D60 Japan; S75 270,000 ton supertankers, S Kor; F71 destroyer launched N Orl; Ja44 same, Houston; D42 "Liberty sh" launchd midnite, Or; D54c NY naval shipyard; Ja60 Camden, N J; Jl52 liner launchd, NJ; Ja51c dory & rowbt loft, Mass; S40 tuna bts blt, Cal; Mr75 (handcraftg schooner) & My40 sailg ship framed, N S; Ja74 handmade skiffs & longliner, Newf; Ap49 Tyne shipyds, Eng; Ag35 launchg Q Mary, Scot; N35 Belfast shipyds; F74 Odense Steel Shipyd, Europe's largest, Denm; Ap70 Viking type small bt handmade; Ag43 lobst bts blt, Brittany; Ap72 Gdansk s'yds, Poland; Ag68 shipyd, Bilbao, Sp; Je56(3b) Trieste shipyd, It; Ag67 hand-shaped fishing bt, Cook isl; Jl72 tradit constr of Arab dhow, Pers Gulf; S18-3 the US indus in WWI

Shipping. *(See also CANALS; SHIPS; TRANSPORTATION; WATER)* Jl78(fdts,drgs,maps) supertankers blt: constr, use, rtes; Mr75 supertanker unloadg Iran oil; N5 & tanker takg refind oil prods to US; frghtrs unloadg, Halifax, NS; Mr70(fdt) oil tanker ice-breaker on NW Passage to Alas; Mr72 Jap ships loadg wheat, barge w logs, Vancouver; D78 Can wheat trans-shippd to Eur, Ont

D54c NY harbor; Ja38 famous passenger ships at NY piers; Ag73, Ap59, Jl37, S36 Gt Lakes freight; Jl36 banana trade, Bost; Je67 loadg corn, Ill; Jl76 takg on wheat, Kan City; F41 stern-wheeler loaded w cotton bales on Miss; N58 towbts w barges of sulfur on Miss; S64 coal, Norfolk Va; F53c sulf, alum, bananas, N Orl; O75 & Mr68 Mobile Bay, Ala; D63 bananas, Tampa; D47c La; Ja79 LA-Long Beach harbor

Ap51c loadg sugar, PR; D65 bananas, St Lucia, WI; Ja41 molasses bbls on wharf, Barbados; Je76(pn) Sp s w new world, Havana, 1622; D77(f,pns, old pr, map/pn supp) Span galleons trade w new colonies 1494-1750

Ja33 oil, Peru; N67 beef, corn, B Aires

Je61 & Ja37 London port; Ja40 Southampton; Mr79 Antwerp, Belg; Ap68 Rotterdam, Neth; Ag77 & Je33(f) Hamburg, Ger; My75 old port, Marseille, Fr

Mr65(Isr) & My69(Kuwait) oil; F73 constr harb facilities, Oman

D71 Shanghai; Mr70 lighters, Kobe, Jap; D77 strait E of Inland Sea, Jap

Ag53 peanut sacks pyramid, Nig; Ag66 groundnuts, Gambia; Jl75 mt of US sorghum on Dakar dock, Seneg; Ap75 maize & copp bars shippd fm Tanzania

Ja74 liquef gas piped 3 mi to tanker, Brunei; S76 Jap carrier loadg phosphate, Pacif isl

Steel. Ap47c2 & Ag17 both genl surveys of indus; Mr70 modern techniques of Jap s mill; Jl63 steel mill, Ont; F76 s fm taconite ore, Minn; S64 blast furn, Sparrows Pt, Md; Je67 same, Chic; Je48 Calumet Harb sheet & tube wks fm air; My31 open-heart furn, Ill; S35 basic s furn, Del; Jl52c anvil & chain pl, NJ; sheet metal stampg; Mr65 bloomg mill, Pittsb; Mr49c ferrochromium pl, SC; blast furn, Miss; Mr55c open-hearth s wks, Braz; Ag77 Thyssen's complex, Duisburg, Ger; Jl68 Ital foundry; F68 forging s, Czech; Jl70 Luxemb; Ap71 Hung; Je69 s & iron wks, Rumania; Ja69 Taiwan blast furn; Ag 66 elec steel blast furn, Singap; F75 foundry, Dampier, W Austl; Ap70 blast furn, Austl

Textile. *(See also ARTS & CRAFTS:WEAV.)* F41c2, Ja51 & Mr20(Mass mills) cotton; Ap65 mod Ethiop cotton fact; N71 mod cotton-gin, Uganda; Mr62 textile mill, Mongolia; Ag50c dobby loom, Switz; O56 dyeing t's, Switz; My63 mach spinning wheels, Ind; Jl21 & D60 (both Jap) & My19(Pa) silk mills; Mr49c & N39c2 synth fabric prod in US; F62 N C; Mr53c S C; S35c fabrics, rugs, Del; Ja51 re-weaving errors of mechan mills; knitting machines, Mass; S31 cotton mill, NH; My31 lace curtains, Ill; N33 ropemakg fm hemp, NY; Jl35c linoleum pl, Pa; Jl37 clothg, Wis; Ag74 stitchg corduroy, Pyongyang, N Kor garm factory; Jl70 nylon weavg, Luxemb; Mr54 candlewick bedspreads; Ag79 t pl, N Yem

D62 carpetmaking pl P Rico; Ap74 carpet loom spindles, Damascus; D54c Cauc & Pers carpets, Leb shop

My48c duffle blanket mill of Eng; N35 ropemakg mach & braidg trawl nets, N Ire; My48c blanket mill of 18th c still in op, Eng; My70 & O54c Harris tweed(Hebrides); Mr68 shearg & auctng sheep, blendg wool color, Scot; Mr27 hand-loomg table damask, Belfast; Jl65 flailg hemp, Yugo, & twistg wool thread, Bulg; Ag74 bales of scourd wool, Napier, NZ; F71 wool bales sold, Melbourne; Ap75 same in Napier NZ warehse

N64 & S42(China), My50c(Jap), Jl51c(Sp) & My53 (Eng) silkworms; D66 silk cocoons, Syria; Je50c reeling threads of silk, Korea; S23 Chinese hairnet indus; S72 1000 looms weavg burlap fm jute, Bangladesh; Mr32 felt makg, Afg; Mr52c Afr's leadg cotton mill, Zaire

Tobacco. Mr49 t auctn warehse, NC; D63 & Ja30 rolling cigars, Tampa; O77 cigar wkrs, Dom Rep; Ag64 cigarettes, N Irel; S66 making panatelas, Philipp; Je35 gradg t, Rhod

INSECTS. Jl29c2(3pn); My59 giant i of Amaz; Je58 (8pn) Trinidad jungle i; Ag52c(Zahl) & S46c2 enl phot; D66 Calif insects, enl phot; bees, spiders, beetles, katydid &c; Ag41c2(10pn) weevils & imported pests (gypsy moth, boll weevil, corn borer, Jap & Mex beetles, &c); S72 biol tricks to outwit insect enemies: plant louse, mosquit, gypsy moth, cushion scale, screw worm fly, tobacco horn worm, alfalfa caterpillar, bollworm & boll weevil, mealworm, milkweed bugs; Ag21 protecting

US fm plant pests; F77(microphot) many var seen thru SEM (scanning electron microsc); S77(f) amber preserves i of 40-100 mill yrs ago: spider, fly, gr'hopper, ant, &c; Mr61 African i(mantis, tsetse, flatids, meas worm, giraffe weev, tree hopper, grotesque fly, tailor ants, termites, digger wasp, assassin bug &c); S65 Malaya i, mantis &c; Ap77(fdt, coll pn, microphot) i life of a Vt stream (many var); Je65 Del dune habitat; ant lion, velvet "ant" tiger beetle, larva & ad, wolf spider, yellowbanded wasp, maritime or sand locust, microorganisms; Ap68(Zahl phots) W Md: praying mantis, damsel-fly, bubble snail, Polistes wasp, squash bugs, citizen ants, tomato hornworm; O67 Everglades: lubber grasshoppers, zebra butterfly, dew-covered spider web; D76 i on carnivor pls; S46 i commun in flower hd: bandwing fly, spot wing, ladybird beetle &c

Special. Jl27c, My36c2 & My37c2 butterflies & moths (mounted specimens); Ap63(Zahl) monarch butterfly; Ag76(f) monarch win home in Mex; Ag57 b'flies &c in Trinidad jungle, live: Je65 sphinx moth behaves like hummingbird; Ap74 destructn of tussock moth larva in fir forests; Je72 tussock & tent caterpillars; hackberry b'fly; My53 & My50c silkworms; Jl51c silkworm gut

Ap35c2(16pn) & Ag59 bees; Jl37c2(12pn) wasps & hornets; Ag64 deadly effect of wasp stings; Mr61 parasitic digger wasp; N70(feat) fig wasp; Ag34c2(18pn) ants; Jl74(f) bulldog ant of Austl; electron mircrosc port of oth ant species; Ap78(f,mpho) E Afr grass-eatg ants; Mr62(pn) & N79(enl clo) honey ants; F65 safari or driver ants on march, soldier ant(claws close wounds); F73 living chain of green tree ants; Ap43 unbrella ants' cutaway hill

F44c2(10pn) mosquitoes; S79(f,mphos,drg) mosq life cycle, many var; O75 pothole mosquito life cycle; Mr75 mosq eggs & larvae(Zahl microphot); S69 war on mosquit, N C Outer Banks; Ag67 "buffalo gnats," Gt Salt Lake; Ag51c & Je72 dragonflies; Ja74 damselfly; Mr50 tsetse flies studied

S53 crickets; Ag69(feat) locust habits, study, & plaque of '68, Ethiop; Ap53 locust; D15 locust plague; My50(f) praying mantis; Ag76 katydid; Mr75 harvestman; Jl53 cicada; Jl62 & My51 fireflies; Jl70(feat) railroad worm, a many-glow firefly; Jl71 glowworms; Je61 rose aphids; Ap70(feat) ladybug; N71 Antarc wingless fly & land mite; F70 green lacewing fly, bollworm

Allied Orders. Ag33c3(64pn) spiders & D38 trapdoor spider & parasites; Ag71(pns, Zahl phot) many species spider; Mr68(feat, Zahl phot) scorpions collected & phot in Ariz in birth & combat; My72(f) water spider(lives under water); Ja74 fisher spider; F73 jumpg spider carryg off lge fly; Je77 orb-web weaver enshroudg grasshopper in silk; My66 monster earthworms, Colombia; F49 biggest worm farm; Je46 sand, blood & marine worms; O56b(f) teredos(shipworms); Je72 sandworm; My64 leech feeding on human blood, Jl64 Eur garden snail, banana slug

INSTITUTIONS *(MUSEUMS, SOCIETIES, PHILANTHROPIES &c) (See also ART; LIBRARIES; MAMMALS; NATIONAL GEOGRAPHIC SOCIETY; SCIENCE; U.S. ARMED FORCES, and U.S. GOVT. SERVICES. For less known or commercial establishments see regional entries.)*

Museums & Galleries. D60 Ny Cent Pk museums (art, natural hist, zoo); F63 Am Mus of Nat Hist; Jl64 Metrop Mus of Art, Mus of Mod Art & oth; Lincoln Cent & model; D66 & S74(Zoomobile) Bost Mus of Sci; Mr65 Carnegie Museums, Pittsb; Je67 Field Mus of Nat Hist, Mus of Sci & Ind, & Art Inst, Chic; D59 US exhibit, Moscow

Historical Organizations & Exhibits. Jl58 Greenfield Vill, Dearborn, Mich; Ag68 Marine Mus, Mystic Seaport, Ct; S45 Peabody Mus, Salem, Mass; D66 Higgins Armory, Worcester; Je47 Wash Nat Monum Soc; N51c(f) DAR mus & lib; N59 Hearst San Simeon state hist mus; O49 Freedom Train tours US

Science & Special Institutions & Museums. F56 Internat Geophys Yr; Je65 Mich State U Inst of Glacial Studies on Juneau icefield; Mr67 Permafrost Inst, Yakutsk, Sib; Jl66 Edison's Lab(Mus), W Orange, NJ; S48c(f) Smithsonian Inst; Je78(f) its new Natnl Air & Space mus; S74 Smithsonian Astrophys Observ, Cambridge; Ap62 Cornell Ornith Lab, Ithaca; Je67 Oceanogr Mus, Monaco; Je64& Ag56 A.G. Bell Mus, Baddeck, N.S.

Religious Institutions. Mr39-2 Vatican; N61 Montecassino Abbey, It

Philanthropic Institutions. D44, Ap & O18 Red Cross; D63 YWCA worldwide hqs & activs; Ap20 Salv Army around world; Ja57 St Bernard hospice; Ag59 Pestalozzi Vill for Eur waifs

Recreational Institutions. *(See also main hdg SPORTS)* Jl55 Eur youth hostels

Educational Institutions. *(See also main hdg EDUCATION)* My50c U of Va, Charlottesville; D66 & Mr55 Clarke Sch for Deaf, Northampton; Jl62 Internat Sch of Amer(around worl); S57 Robert Coll, Istanbul; N48c 4-H Clubs; My34 Boy Scouts 4th world jamboree, Budapest; F54c jamb at Valley Forge; S56 Philmont natnl camp for Explorer Scouts, NM

Political & Military Institutions. S61-3 UN; Ja19 (by Taft) Leaque of Nations; Je66 Saumur Armored Corps & Cavalry Sch, Fr; D59 Marine Band

IRAN *(Formerly Persia).* Ja75; O51c, S39c2; Jl58 & Ja59 pt, W.O. Douglas trip; Mr68 coronation of Mohammad Reza Pahlavi & Farah; Ja60 pt & N53 Tehran; Je52c & O51c Kashgai nomads; Mr47c2 Bakhtiari(Per Gulf region); Mr46 mt tribes; Ag43 wartime; Ap32 pt, air phot; O33(Persepolis) & D50(Darius) archaeology

IRAQ *(Ancient Mesopotamia)* Ja61; O58; Ap21-2; Ja59 pt Douglas trip; Ag76 & F58 marsh dwellers, S I; D78 Heyerdahl bids & sails reed ship like anc Sumerians; Mr75 Kurds & Iraq civil war; Mr46 mt tribes; Ag41 pt; S42 pt; Ap43 locust plagues; Ja30 Ur archaeol; Ja51c (24pn) anc Mesop life; D66(7pn) Abraham's wanderings & modern scenes

IRELAND *(EIRE).* S69 (hist map); Mr61; My40c2; My51c; Mr27c2; Jl53c Dublin horse show & oth city scenes; N78(f) W Ire; Shannon r; Ap76 Dingle penin on W coast; Ap71 & Je31 Aran isl

Ag64, N35c2 & Ag43(GIs) Ulster

ISLAM. *(See also RELIG. CEREM.)* Jl72(12th c map of Arab world) Islamic conquests & achievements;

culture, relig of Arab world

ISLANDS OTHER THAN PACIFIC. *(Collective only; consult last paragraph of FOREWORD)* Jl27 Cape Verde, Trinidad, St Helena, Ascension, Fernando Nororha

ISRAEL. *(PALESTINE; for Jerusalem see also JORDAN)* D72; Mr65; D67-2(hist & relig emph; art on '67 war); D50c; D38c2 pt; Mr46c pt & D54c pt; Ap34; O46; D68(drgs, maps, feat) reunited Jerusalem; Ap59 & D27c2 Jerusalem; F78(f) Dead Sea regn & resources; D64 Bertha Vester memories of WWI; wildflower pns; D65(2p pn) Sea of Galilee & towns, kibbutzes, agric; S70 border kibbutz Ha On, Galilee; D44 & D40 Jordan r; D51(f) Jericho & Jordan vall; Ja37 Bedouins

History. D66(7pn) Abraham's wanderings; Ja76(f) Moses & flight fm Egypt; D60(13pn) & D57(10pn) anc I; D58 Dead Sea scrolls; D47 archaeology; D29c2, D26c2 & D52 Bethlehem & Christmas story; D63-2(fdt pn) First Crusade & att on Jerus; Mr15 (by Bryce) world hist of Jew

ITALY. N61; Je49c; S36; O30; Jl68(feat) It lakes; Je57, Mr45c2, S35c2, Ap28c2, Ag26c, Ap & Je15, S51c pt & D43 all N I; S65 Dolomites, Alps, Lugano; Je63 N I Riviera & Genoa; Ja35c2 Riviera & coast; F65 Portofino (Riv); Ap61 & Je15 Venice; N72-2(drgs, maps) Venice fights for life agnst erosn, pollut; legacy of art wks; Je56 Trieste; N74 Tuscany, tradit life of people & art monumts (Florence & Siena area); Jl67(pn,fdt) flooded art treasures, Florence, pic map & panorama; Mr45 Flo aft WWII; Ag51c & Ap26 Siena's Palio

Je70(fdt St Peter's Sq & Michelangelo's ceiling); Ap57 & Mr37c2 Rome; Mr39-2 & My60 pt Vatican; D71 St Peter's, art & sculp; Mr40c3 & O38(antiq) Rome antiquities & Fascism; Ag34c2 Naples & Pontine marshes; Je70 Capri & Ap54c Ischia; F23 duot, Calabria; O59 Amalfi; Jl44 wartime; D35 & O30 Horace & Vergil country; N56 Marostica chess fest; F30 S I village archit; Mr76, Ja55, O27c & O24 Sicily; F & S43 Sicily in war; Ja23c2, Ap 26c & Ag16 Sardinia

History. *(See also ARCHAEOL:ROME)* N46c2(32pn) anc Roman life; D62(pns) Late Roman Emp & its decline; N61(3pn) last days of Pompeii

JAPAN. Mr74 modern, industrialized, overcrowded city life; D60; My50c, Mr33c3, Ja38c2 & S22c2(2c) & Jl21c2 (incl phys geog) traditional; O64 & F32(f) Tokyo; Je76-2(f) Kyoto & Nara; Ap36c2 castles, shrines, parks; D77(f), S67 (kayak trip) & N53c Inland Sea; Mr70 Kansai (Osaka region) J's hist heartland; My72 village life; S72 Jap arts & crafts; D59 Grosvenor trip, pt; Ag42; D45; Ap47 backwoods(US occup); Ap44 imperial build-up & Je46 letdown; F67 Ainu people of Hokkaido, crafts, farm life, rituals &c; Jl78(f) rice god festiv; Ap77(f) kite-flyg; D68 snow festival, Hokkaido; O45c, Ap50 & My45 Okinawa & Ryukyus; Jl53 Adm Perry opens J

JEFFERSON, THOMAS. F76(f; port, old pr, ms) life & bldgs; N64 pt; S66 J's Monticello

JEWELRY. *(See also ARTS & CRAFTS; MINERALS)* D71(feat) & D50c(feat) diamonds & cutting, pearl, topaz, emeralds, garnets, zircon, jade, beryl, rubies & oth rare minerals; S37(f) platinum; N77 oldest gold j known fm Bulg grave 3500 BC; My77 Celtic gold beads brooches &c; Ja79 some famous diams; My48 diam gradg, Belg; S53c Brit crown jewels (Coronation); Je68 1000 yr old Habsburg crown, Vienna; Ja38 1M yr old Hung crown; Ja78 Russ crown js; Je72 anc Byzant j; Ja67 imp crown of Dom Pedro II of Braz; Mr69 anc Korean gold crn, 7th c; Ap66 Ceylon's fabulous gems, sapphires, rubies &c; S77(f) amber embeddg insects 40-100 mill yrs old; D50c Last Supper fash in pearl shells, Jerus; My79 pink coral pend & neckl; N68(Austl), Ap70 opal, Austl; Ja72 nephrite jade pendant by Maoris, N.Z.; lgst known Maya jade carvg; S41c & S43 anc jade, Mex; Ag56 orient jade coln, San Fr; S69(Okinawa) & My50(Jap) cultured pearls; Jl50 costume j in Paris; Ap70 Viking j; Je69 j of Span Armada wrecks; gold, cameos, rngs, silv figrs, beads &c; Je76 j rescued fm Span Atocha wreck of 1622; gold chain; cup, manic set, rosary &c; D77 more fm Sp wrecks: gold cross w emeralds, 10' gold chains, neckl, ring; D79 more gold & jewels fm Sp wrecks of 1724; F41 Eng j of 600 AD fm ship burial mound; S70 N.M. Ind turquoise & silver j; Ag79 Inadan silverwk, Niag; Ag70 7-in. long gold raft, Colomb Inds

JORDAN. *(Called Transjordan 1920-49)* D64, D52, D47; D37 Bedouin life; D44 & D40 Jordan riv geog; D55, D47c pt, & F35c2 Petra; D53 & D51 Jericho archaeol; F44 King Solomon's mines discov, Gulf of Aqaba

KENNEDY, JOHN F. Mr64 funeral

KENYA. F69(fdt); Mr50c; O54c Masai tribe & spearing lions; O56 royal "Treetops" hunting lodge; S71 aquatic wildlife, Tsavo Nat Pk; My70 R.E. Leakey archaeol exped, Lake Rudolf *(See also ARCHAEOLOGY: Africa)*

KOREA. S75, Mr69 & Je50c (all S K only); O33c2, My53c; Je47(US) & O45(Jap) occup; D79 Seoul; Ag74 N Kor

KUWAIT. *(Indep. 1961; formerly Brit.)* D52c; O75(pt)

LAGORCE, JOHN O. Mr60 incl Nat Geog Soc

LANGUAGE. *(See also WRITING)* F23 Eur lang boundaries; D43(map of major langs) probs of world's langs; Ag20 US state names; Jl62 Tenn hill dialect & expressions; F16 Mesop cuneiform writing; F22 Mayan & Aztec inscr interpreted; N64 runic inscr on stone & 14th cent Icel vellum; Ap76 Irish lang in Dingle penin sch; My77 Celtic lang map of W Eur; Mr78 lang map, Sp & Port; F79(f;map) Flemings & Walloons div Belg; Ap77 Fr lang in Can; Jl50 langue d'oc; Mr62 Mongol script in Ulan Bator state lib; D66 Smith Coll lang lab

LAOS. *See INDOCHINA.*

LAPLAND. *See FINLAND;NORWAY.*

LATVIA. *(LATVIAN SSR)* O24; Je38 pt

LEAKEY, LOUIS S.B. F65; Ja73(f) son Richard E. carries on work

LEBANON. F70; Ap58; Ag65 & D46c pt; Ja68 pt, Beirut, Tyre; D38c2 pt; Ag74(f) anc Phoenicians

LEE, ROBERT E. Ap65 esp at Appomattox

LEONARDO DA VINCI. S77(f; drgs, pns, mss) his accomplishmts in many flds

LIBERIA. F48c

LIBRARIES. *(See also WRITING)*

National & General Libraries. N75(f); My50(f) & D64 L of Cong; Mr50c Boston Athenaeum; Harvard's Lamont L; F58(f) Huntington L, Cal; Amherst's Clyde Fitch mem rm; Je51 US Info Serv L, Vienna; F55 & D31c bkmobiles; S46 wilderness l; Ark; Jl67 Natnl L, Florence, & damaged bks; Mr62 State L, Ulan Bator, Mong; Ag67 pub lib serv in Pac isl admin by N Z

Special; Historical. S51c & Mr42 Folger Shakespeare L, Wash; N51 DAR L, Wash; F55 Am Antiquar Soc L; Ag46c Lib of Parl, Lond; Ap50c Kew Gardens botan L, Lond; D62(pns) mediev monastic l & scriptorium; Jl69 & O56 18th c St Gall abbey L, Switz; Ap79(3p fdt) L of 12th c Strahov monast, Prague; Mr39 pt, Vatican L; F59 Lilienfeld Abbey L fnded 13th c; Mr78 & My51 Tibetan block-prnted bks in Lamayuru L, Lhasa; Jl72 relig l, Medina, Arabia

Personal. S66 Jefferson's L, Monticello; N53c Washinton's L, Mt Vernon; Mr50c Adams fam L, Quincy; Ap45 Kipling's L; My68 Baron de Rede's L, Paris, fm 18th c & earlier; Ap54c Arthur Houghton's personal L, Md

LIBYA. Je30c2 Cyrenaica, esp E L; Ag25c2; S24

LIECHTENSTEIN. N27; Jl48 brf

LINCOLN, ABRAHAM. F60c2(pic map; old engr) & Sandburg speech; F52c L land; Je34 log cabin b'place shrine, Ky; Jl63 L at Gettysburg; F51(pn by Healy) L w genls, 1865; Mr70 at Ford's Thea

LINDBERGH, CHARLES A. S34 Ls fly around N Atl; Je34 Anne L wins medal of NGS; Ja & My28(96il) "to Bogota & back by air"

LITERATURE. S55 & Ap49(hist & lit, entire issue) lit landmarks of Eng; My64 Shakespeare's Eng, Globe Thea(fdt; pn); S51 Globe thea model, Folger Lib; Ap56 lit landmarks of Eng Lake Dist; O57 of Scotland; My46c Scott's "castle" Abbotsford & Burns' Brig o' Doon; lit landmks of Scot; Ap74 (f:old prints) Eng of Dickens (chfly Lond); D24 lit landmarks of Cornwall; My77(pn) Celtic tales of Cu Chulainn

Mr50c lit landmarks of Mass; Jl74(pn) Thos Paine; F20 Thoreau country; Ap76 N Eng scenes illus Frost's poems; S75 Mark Twain's Amer; Jl56 & Mr46c his Hannibal, Mo; S72 his Hartford home; Mr66 Longfellow's "Evangeline"

D35 & O30 Horace & Vergil country; Mr65 Don Quixote windmills, statue; Ja67 "Crusoe isl" off Chile; S65 Schiller's Wilhelm Tell enacted; D79 Andersen, his fairy tales & Danish background; Ja76 Solzhenitsyn recvg Nobel prize

LITHUANIA. *(LITHUANIAN SSR)* Je38 pt & same duot, Wilno

LOFOTEN ISL. *See NORWAY*

LUXEMBOURG. Jl70; Je48; N24

MADAGSCAR. *(MALAGASY REP.)* O67-2(l on extinct bird); Je42; Ag29

MADEIRA. Ap73; Mr59; Jl34c2

MAGELLAN, FERDINAND. Je76 *(by Villiers pns, old pr)* first voy around world 1519-22

MAJORCA. *See BALEARIC ISL*

MALAYA. *See also MALAYSIA*; F53c

MALAYSIA. *(See also SINGAPORE)* My77(f); N63 Malaya, Singapore, Sarawak & N Borneo(Sabah); S64 Peace Corps in Sarawak(brf); My56b Sarawak; My64 giant flowers & insect-trapping plants

MALDIVE ISL. Je57 (off S India; Villiers)

MALI. Ag66 Timbuktu & excav of Tellem people; Mopti; Ap41; Ag75 Niger r(pt M); Mr69 Dogon tribesmen, Bandiagara cliff dwellers; witch doctors

MALTA. Je69; N35, Ag40; My20; Mr43 rubble

MAMMALS, GENERAL & REGIONAL. *(See also DOGS; WILDLIFE)* Ap57 Washington zoo; Je53(f) Lond zoo; Ja46 helping in war; Je38 taking them alive; N56b Bronx zoo school exhibit; O31 circus lions, tigers & elephs performg; F63 specimens in Am Mus Nat Hist.

America. N16c(50pn by Fuertes) larger a; My18c (59pn Fuertes) smaller a; Jl39c2 Rocky Mt hoofed a; N67 Yellowstone; Mr72 & Je56 Alaska; also Ag35 plus small a & F32; S41c desert isl off Baja Cal

Africa. F72(f; 3p fdt pn 50 species) many action scenes, some fm air; S60c2; Mr50c(excell); F65; Ag53c; O39 duot, herds fm air; N62 many incl a babies in Uganda

Australia. S63 & F73 esp marsupials

India. S75 extensive

Philippines. S48 Mindanao rare a

So. America. Je57 Br Guiana sloth, anteater, cayman, manatee, capybara, coatimundi; N52 Brazil; Mr76 & O33 Arg coast

Thailand. F28 eleph, tiger, gibbon

MAMMALS, SPECIALIZED, BY CLASSES.

Whales, Seals, &c. Ja40c2(31pn) whales, porpoises, dolphins; D76(pns,map & pn supp) whales of world; Je58 sperm & Jl56 gray wh; Ap73 sperm wh beached, Madeira; Mr73(f) bowhead or right wh butchered by Alas Esk; Mr76(f) & O72(f) swimmg w Arg right wh (undersea phot); Mr71(f;2pn) Cal gray wh comes back; Ja79-2(f,phonodisc) humpback ws; "songs" recorded; Mr62 & Jl70 beluga or white wh; Ag62 finback wh heartbeat measured; Ag30 same & pig ws, Antarc; Mr66 killer wh Namu, Seatt; Jl69 same in captiv, Cal; Ja21 killer wh; Ap79(f) same attack blue w; Mr76 same attackg herd of sea lions; Jl39 blackf (pilot w)

Ap79(f;pns,fdts) dolphins, porps, killer w; S66(f) albino porp, birth of dolphin; Mr76 dusky dolph sch, Arg; N52 porps, Marineland, givg birth; Ja49(pn) porp

Ap52c(f) Pribilof seal; N68(f) harbor seal as pet; Je75, N74 harbor s; Ja66 & Ag30 Weddell s, Antarc; Ag30 crab-eater seal; Ap67 Zalophus sea-lion; Mr76 & Ja67 sea-lions, Tierra del Fuego; S78(fdt) sea lions underwat, Galap; Ag77 leopard s devourg penguin; Mr76 s attackd by killer wh; Ja55 leopard- & eleph- s, whaling sta, S Ga isl; N71 same, Antarc; My78 monk seal, Haw; F63 sea eleph, Antarc; S41c2 & Mr75(Arg) eleph s; O70, F71 & Ap52c fur s; Je63 & D79(juv) Steller s; Ap70 whitecapped hair s, Austl; Ja76(f) & Ja48c(f) harp s; slaughter of pups; My67 harp s; Jl67 gray s, Scillies; Ag72 undersea phot of y seals, Cal; Ap69(wal-

rus) & Ja48c(seal) huntg; O79(pn,maps), My & O46 walrus

Other Aquatic Mammals. Je40(clo port), D36 & Mr24 dugong, Austl; Ap26 manatee, Amaz; S69(f) & Ja49(pn) Fla manatee *(For otters see CARNIVORES below)*

Ungulates. (Hoofed Mammals)

ELEPHANTS. Je34(long f) Afr & Ind; O57b(f), Mr69(f, roundup), Mr55b & F28 all Ind; N62, S71 & Mr51(f) Afr; Je67(Riviera) & Ap54c(Ceylon) bathg; Jl67 workg, Thai; Ja67 w calf, Pakis

HORSES, ZEBRAS, &c. N23c2(24pn, entire issue) hs of world; Je68 & S58 Lipizzaner hs, Vienna; Ja53 (Dublin) & N54c(NY) h shows; D54 Arabian stallion; Jl75 Belg & Percheron workh teams haul 10M lbs; Ag69 shaggy Icel ponies; Ap70 small Icel hs; Ag63 & Ja46(Eng), O53 (Shet), S65(Sable isl) & F72 (Assateague isl, Md) wild ponies; Ja71(f) wild hs on US Fed ranges; Ap72(f) wild burros, Death Vall; Mr75 miniat h, Arg; S76 wild asses, Ind; Ap69 & Jl68 Burchell's zebra; S71 & F72 zebra

RHINOS & HIPPOS. Mr57(f) & S76 Ind rhino; Mr50 & Ag53c rhino; Ap31 white rhino charging; S71 hippo; F72 same w baby snatched by croc (3c); N52(Braz) & F34(Ecua) tapir

HOGS. S78(f,pns) pigs wild & domest; Ja68 & S53 collared peccary; Mr50 warthogs

CAMELS, LLAMAS, &c. N65 Sahara dromedary; Ja67 (Pakis) Bactrian camels & camel dancg; My70(fdt) & S42(f,duot) camel

Ja73(f,pn) vicuna, llama, alpaca, & paca-vicuna; My46(f) llama, alpaca, vicuna

DEER. O39c2(23pn) deer of world; N67 & D56 elk, mule deer, moose, buffalo, bighorn, antelope, Yellowstone, Je73 mule d, elk, bighorn, Can Rockies; D76 elk herd, Wyo, Jl66 elk (fdt), moose, Dall sheep herd; S66 & Jl39 mule d; F63(f), Jl50(pn), D65, O71(fem & calf) & My70, D79(sheddg velvet, & Jl39(5c) moose; F74 yearlg moose, Jl64 & Ap66 elk; Ap64 elk, mule d & moose; D56(clo) mule d, moose, elk, bison, Yell Pk; Ag77(Sib), S77(Norw) & O76(Yukon) reindeer; Ag52(f) caribou census, Can; D79(fdt av) & caribou; D74(f,Alas) & O71 (Alas) caribou; Jl50(pn), Mr79, Ja68, O67, Ap70 & Mr71(in flight) Va white-tailed d; My77 key d, Fla; S76 swamp & musk d, Ind

GIRAFFES. S77-2(f,pn,14c) giraffes

ANTELOPES. Jl50(pn), N67(in flight, Yellowstone) & Ja69 (Ore) & Jl39(6c) pronghorn; Ag45av herd at 60mph; Ap75(vast herd fm air, fdt) & F72(fightg wild dog) wildebeest(gnu); F69 gnu; Ag69, S71 & F72 impala; S71 eland; Ag56(pns) bushbuck, kob, oribi, Afr; S76 black-buck, Ind

SHEEP, GOATS, CATTLE. D25c2(20pn) cattle of world; S72(f), N67 Rocky Mt bighorn; D79(2p clo), Jl66 Dall sheep herd; F70 & Jl39(9c) bighorn; Ag69 baby bighorn; Ag78(f,10c), F74, O70 & Je50c mt goat; N71 Kashmir markhor (rare wild gt); S76 Nilgiri tahr(wild gt, Ind); Je70(f) & Ag67 & O46 & D79(clo) musk-ox; Mr79 same, airlifted to new range; My57, N67(fdt herd & clo), Je53 & Ag71 & Jl39(3c) bison(buffalo); D78 same, Wyo wint; Je77 Cape buffalo herd; Jl67 waterbuff, Thai

Primates. Ag40c(10pn) apes; My38c2(40pn) monkeys; Ja56 many var mkys; Ja70 & D71(Fossey), Ja60 (Zahl) & Mr64 gorillas; O78(f,fdt,41c) conversg w gorilla "Koko"; O70(f) & Mr67(f) world's first albino gorilla; My75(f) baboons, Kenya; Ag56(pn) Doguera baboons; O75(f) orangutan, Indon; My64 same, Malaysia; My79 (pns, chart), Ag63(pns) & D65 (Tangan, all Goodall) chimps; Jl53 & F28 gibbon; F53 berok (coconut) mky, Malaya; Ag56 green m & red ground m, Af; F74 proboscis mky, Borneo; S76 macaques(3 var), Ind; langur, hoolock or white-browed gibbon; O76 rhesus mky, Fla; N52 howlg mky, Braz; Ag76 red howler mky, Venez; Ag70 capuchin mky, Colombia; My61 mkys in space flight

O67 & Je42 lemurs, ring-taild & ruffd & sitaka, aye-aye; S48(clo, 5b) tarsier; flyg lemur; N62 galago, smallest Afr prim

Carnivores. (Flesh Eaters; see also main entry DOGS)

CATS. Ap64 & N38c2 domest cats; F43c(20pn) large cats; Ap69(f) & Mr50 lion; My61 tiger; Ap70(f) white tiger cub; S76 leopard, Ind; N71 snow leop, Ind; N52 jaguar, Braz; Mr58(Arg), N33 & S27 (C.Z.) ocelot; N69 (f) tagging mt lions; Ja49(pn) same; Je40 in tree; O33 same, Arg; O67 bobcat; F77(pn), Ag53(pn), D79(Alas) Can lynx; Ja49(pn) & S32 bobcat; Ja63 & F72(lrng to kill) cheetah; Mr62 serval cat, Afr; Ap64 & N38c2 domestic cats

HYENAS. Jl68(f) & Ap65

WOLVES, FOXES, &c. O77(f) wolf: var spec; Ag53(pn); F63(f) wolf chks moose, Minn; O71 wolf druggd; Ag74 (f) coyote fam life; Jl50(pn) & Ag79 coyote; F74, Ag53 (pn), D79(Alas) & Jl77 red fox; My70 red fox cubs; O76 & D79(blue phase) arctic fox; Mr76(clo) gray fox, Arg

BEARS. Ap71(f) polar b; My64 same vs dogs; O79 attackg walrus; D79 at whale carc; D78 swimmg, Hudson Bay; Ap78 same, Spitzbergen; O51c pol b, Gr'land; N16(fdt pn), S75(f), Ag54c(f), Je75(port w cubs), F79(w cubs), Mr79(anesthetized), Je65, Je63 all Alas brown b; Ag60(f,tagging), Ag53(pn), Jl76(w cubs), Ag35, O79 (clo,young) all grizzlies; D74(6c) griz & wounded caribou battle; Ag66(f) trackg griz by radio; Jl50(pn) black bear; Ag41(f) same, quadruplets; My72 black b, druggd griz; S76 Himalaya black b

RACCOONS, PANDAS, &c. D72(f) giant panda, Wash zoo; lesser p; My77 & D56b raccoon; S79 raccoon, La; Ja49(pn) & F32 coon, Cal; Mr66 marsh rac; S53(US), My32 & Ag37(Panama) coati; Ja49 kinkajou, Pan

SKUNKS, WEASELS, OTTERS, &c. Mr66 & Ja49(pn) otter; O71(f) return of sea otter; Ag72 same (undersea phot); Ag35 pine marten; S71 spotted-necked otter, Afr; Ag55b & Jl50(pn) skunk; Jl50(pn) badger & skunk; Ag53(pn) wolverine; Ap54(pn) ratel or honey badger; F32 & Ag36 civet cat; S76 mongoose killg snake, Ind

Rodents. Ag50c(f), Ap78, Jl77 & Ja73 (quills on dog's face) porcupine; Je57, Ag76 & N52 capybara; Mr76 cavies or maras; cuis w litter, Arg

My74(f) & My55(f) beavers; Je72(clo) muskrat litter in nest; Mr66 nutria, La; Ag69, My56 & Jl55 marmot; Je72(clo) groundhog(marmot); Ag79(f,pn;11c) & O56c (2clo), & D48 prairie dog

My47 flyg squirrel; D & O79(clo) ground sq; S66 Columbian & golden-mantled ground sq; Mr79 13-lined ground sq; Jl78 kaibab sq; My34 fox sq; Jl31(f) chipmunk

Jl77(f,coll pn) rat: habits & world health menace; Jl17 rat plague; My66 pacarana or Branick's rat, Colom; N79 & O40 kang rat; S32 cotton & roof rats, Fl; My34 swamp rice rat; S48 cloud r, tree shrew; Ag53(pn) field mouse(vole)

Rabbits, &c. Ap66 white-taild jack hare; O76 western black-taild jackrabbit; Ja49(pn) & S32 Fl swamp rabbits; D79(Alas) & Jl76 pika; F34(clo, Ecua) & O33(Arg) agouti

Insectivores. My54c spiny hedgehog, Scot; O67 tenrec

Anteaters, Armadillos, &c. O74(Tex) & O76 (Fla) armadillo; F49 giant armad, Braz; O33 same w baby, Arg; Mr76 peluda(hairy armad), Arg; My64 giant anteater swimmg; F49 same, Braz; Je38 pangolin (scaly a), Sumatra; Je57b & N30 great & tree anteaters; sloth; N77 & N52 lesser a(tamandua), Braz; N33 least a; Mr70 (3 toed) & Jl65(2 toed) sloth

Bats. My73(f) bats, abt 16 var in hi-sp clo; Jl46 & Je64 bats; Je42 vampire, WI; Ap61 bat's "radar"; Mr68 fruit bats, Tonga; O44, Ap36 & S30 fruit b, Micrones & Austl; D36 gray-headed fr.b, Austl; S48 flyg lemur(pt b)

Marsupials. S63 & F73 many marsupials, Austl; F79(f) kangaroos, many spec; Mr53(f) & F32 opossum; Mr76 murine opossum, Arg; O55b kangaroo; Ap69 tree kang, N Guinea; O44 & Je38 cuscus, Molucca; Mr70 koala & sooty kang; N68 & S31 koala bear; D56 Tasmanian devil

Prototheria. O58(f), Ag39(f), F49(worm farm for ps) & S63 platypus; O44 & D36 echidna(spiny anteater)

MAMMALS, EXTINCT. *(See also BIRDS, EXTINCT; DINOSAURS, FOSSILS)* D55(8pn) Ice Age m hunted by early man; F42c(24pn by C.R. Knight) life thru ages, crustacea-mammals; N16(6pn) some prehist Amer m; O61(pns) huntg scenes of early man, Afr; Je62(pn) Ice Age man vs mammoth; S79(pns) same also vs horses; Je33 baluchitherium & shovel-tusked mastodon; Mr72 (pns) mammals of Ice Age Alas reconstr; Ja79(pn) Ice Age bison; Ja75(pn) composite pn of Ice Age mammals, Cro-Magnon period; Jl47 mastod skel & model, NY; Ja63(pn) Stone Age giant rhino; Jl44 camel skels, Neb; My47 rhino & giant pig skulls & jaw, protoceras(pn), foss bird egg; N61 petrified sea m remains; Je64 bones of extinct m fm ocn floor, Fla; F65 same fm Leakey digs, Afr

MANCHURIA. *See CHINA*

MARSHALL. GEN. GEORGE C. Ja60

MAURITANIA. Ag66(brf), N67, pt

MAURITIUS ISL. Ja56

MAYA. *See MEXICO ARCHAEOLOGY*

MEDICINE & HEALTH. S17 geog of medicines; S22 map-changing medicines; S76-3 the new biology; DNA, genetics &c, cancer puzzle, 7 pioneers; how "immune sys" wars of infectns; Tay-Sachs dis & prenat detec

History. S74(12pn) med herbs & hist of med; Ja51c (pn) med in anc Sumeria; D73 pre-Columb Inca surg & dent techniques; S77 anat drgs of Leonardo da Vinci

Public Health Services. O79 Nat H Serv clinic, Eng; Je18 WWI milit med serv; S17 pub hlth at home; N43 WWII med serv; Jl68 Can Mntd Police as health off; Ag74 rural visitg nurse, N Kor; Ag71 med & soc serv for Filipino tribesmen; F75 penic shots for Braz Inds; S75 med serv, Gr'land; Ag75 nurse visitg black lung case, Ky; Jl72 testg for bl-lung, W Va; Ag47(f) Red Cross in postwar Fin; Ap76 & D46 dr visitg marsh dwellers, Iraq; Jl77(f) & Jl17 rats as hlth menace; Ap56b MD combattg malaria, Ind vill; O70 birth contr clinic, India; Mr65b Pittsb de-smoggd; My69 med & rehab serv, Kuwait; wheeld walker

Public Baths, &c. N73 whirlpool bath, Fla; F39 geyser mud b, Cal; O77 therm spr bathg, Ut & Col; N33 Sarat Spr devel; S46c hot spr, Ark; F68 takg waters at Karlovy Vary(Karlsbad) Czech; Ag38 volc mud b, Cz; O77 & Ap71 hot spr blt by Turks 1566, Romania; N75 hot sulf baths used since Roman days, Romania; Ag69 pub bath fed by hot spr, Icel; O38 sauna b, Fin; D60 Jap commun bathg; Mr74, Ag42, D77 hot springs sand baths, Beppu, Jap; Mr74 pub company hot bath, Jap N46(pns) Romas bs

Nutrition. Jl17 famines of hist; Jl75(drgs) diseases of malnut incl brain-damage; aidg the starvg, Bangladesh; Ap74 drought effects, S Sahara; S71 Capt Cook's antiscurvy diet; Ja76 malnourished boy, Haiti

Primitive Medicine & Shamanism. Ja19 med fakes & fakers of all ages (esp mediev); O64 "mediums" in Cambodia & F67 in Viet; Jl77 & Ap69 med sorcery, N Guin; Jl73(Bangkok) & Ja72(N Hebr) "witch drs"; My76 trance dance treatmt, Philipp sea-gypsies; O49 Esk shaman; D48 Navajo m man; N40 1888 phot of 5 Zia m men at wk; Ag76 shamanism & actg out grievances, Inds of Venez; Je77 mara'akame exorcizes pain, Mex Inds; Ja66 shaman rituals of Braz Inds; F72 opium addict cured by Buddh priest, Thai; "spirit specialist" treats youth; Mr73 hernia op in Zaire vs witch dr; D71 & Ap31 tradit vs modern Zulu drs; Je42 Madag m man at wk; Ap77 lama cauterizg vein w hot iron & herbs, Nepal; Jl45 bloodlettg, Alg

Drugs. Ag76 hallucin drugs used by Venez Inds; Jl77 & Ja68 poppy (opium) farm, Turk; Ag17 khat leaves, Arabn stimulant; Ja74 handlg opium addicts, Laos; Jl77 smokg water pipes, Turk; Mr46(f) quinine huntg, Ecuador; Mr22 lebrosy-curg oil; Mr51 mfr of terramycin, NY; Jl49 streptomycin, drug pl, Va; My72 preparg pharmaceuticals, Egypt; Je35 open-air druggist, Mor

Surgery. My73, Mr66 & S59 Russ women surgns & dentists; Mr65 Isr eye-surg; F76 argon laser beam in eye-surg, Minn; D66 med apps of laser beam; D71 acupunct of deafmutes, China; N64 Chin restore arm by surg; Mr62 acupunct & mod surg, Mongolia; S67 open heart surg, Tex Med Cen; N69 same, Stanford U Med Cen; Je77 artif kidney mach in op, S Afr; Ag76 brain-surg for Parkinson's dis, Edinb; D53 gamma globulin productn, Ill

Research. Ag55 aviatn med for fut; Mr64 space med in moon explor; O62 Himalayas, effects of high-alt

livg; Jl49 testg dust-filld air, Pa; Jl63 treatmt of diver w bends; Ap65 divers remain 2 days at 432 depth (Lindbergh-Stenuit exped); Je73 noise res on rock band; Mr75 6 mos cave test of isolat effects; Ag78 & F69 virus studies at Nat Commun Dis Cen, Atlanta; My34(Bangkok) & N30(Braz) snake venom farms; N50c immuniz to cobra venom, Miami serpentarium; Mr50 tsetse flies studied, Afr; Jl73 testg venom of tree-frog as neurotox for for heart dis; N75 testg Gerovital in treatg aged; Ja54 atom energy for m

Diagnosis. My74 Chin lady entombed 2100 yrs died of heart att; detaild autopsy; Ag68 skin temp plotted by liquid crystals; Mr78(illus chart) photog in diagnosis; x-ray, CT scanner, stereo camera, video-tapes; F77 SEM (scanng electron microsc) as a diagn tool; Ja69 heat phot of head reveals blockd arteries; O79(f) endoscope w optic fibers in tube; Je73 cancer detectg electronic port of patient's maligriant areas

Therapy. D78(f; maps) disapp of smallpox; D77 leper colony at O Shima, Jap, & treatmts; S64 treatmt of leprosy, Bolivia; Mr79 treatg emergency respir distress, Denver's Childr Hosp; Ag55 cobalt trtmt for cancer, Sask; F44 curg paresis by malarial mosq bites; O72 & Mr74(Jap) merc pois therapy; Ja73(f) centenarians of Georgian SSr, Hunza(also N75) & Ecuador

Hospital Services. Ja70 W Berlin Free U gigant Klinikum & autom distrib sys; S74 childbirth at E Ger hosp; Ja76 autom bedmakg; birth in Swed Pub Matern Hosp

MESOPOTAMIA. *(See modern IRAQ)* Ja51c(24pn); D66(7pn) Abraham's wanderings

METEOROLOGY. *See PHYS. GEOG. ATMOSPHERE.*

MEXICO. My78-2 incl folk arts; O61-3 incl 2 on archaeol; Jl16-3; S40c, Jl30c & D34(duot)

N & W Coast. My71 US-M border by motorcycle, Tijuana-Gulf; F55(f) Sonora; O72-2 Baja Cal's rugged out-back; S41c2 & Ag42 Baja desert isl & wildlife; N73 W coast; Baja-Acapulco; Ag68 W Mex, US-M City

Mexico City. My73(pn,hist maps); D51c F44c2 incl Paricutin volc; Jl30 & Jl16

S Mexico. Mr53c Guanajuato social experim; Jl16 Guanajuato state & city; Mr67, Mr34c2 & Jl30c(few) Guadalajara; Mr23 "along old Sp rd" in Nayarit & Jarisco, San Blas-Guadalajara; Je68(f) Mexcaltitan, isl city in Rio San Pedro delta, W coast; My37 Tarascan Inds, Patzcuaro lake regn, nea[illegible]orelia

S40 on Cortes' trail, Veracruz-M City; D64(fdt map & pics) Acapulco archit & recr; D34 trav by donkey in back country, Oaxaca-Acapulco; Ag46c Rio Balsas fm Taxco, "hot country," My24 isthmus of Tehuantepec; N36c2 Yucatan; F45(19pn) wildlife, Tabasco & Yucatan *(See also INDIANS, SO. AM.)*

Archaeology. *(See also ARCHAEOL. GUATEMALA)* O68(pn,feat) Nat Mus of Anthrop, M City; Je37c2 (10pn) Aztecs; N36c3(2c,10pn) Mayas; Jl31 & Ag23 Morley & Cummings expeds to Yucatan, & Cuicuilco; Aztec hieroglyphics deciphered; Ja59c2(3pn) Dzibilchaltun lost city of Mayas & O61(pn; 2 pic maps) Chichen Itza sacrificial well dredged; Jl31 & Ja25 Chichen Itza; N42c2 & S41c3 jade jewelry; F47c2, S56 & S43c Olmecs, La Venta man; O32 Zapotecs & Mextecs at Monte Alban excav; Ag39 & S40c Tres Zapotes, oldest Amer dated wk, Veracruz; Ag68 Pyramids of Teotihuacan(pn); 15 ft statues, Tula, capital of Toltecs; Ja48 mound builders of Miss Vall & Mex

MICROORGANISMS. F79(f;mphos) rotifers; Je79(diagr, mpho) diatoms, "1-celld specks of algae;" Jl60 pyrodinium (in Phosphorescent Bay)

MIDDLE EAST. *(See also sep countries, e.g. EGYPT, IRAN)* D54c; D38c2 Syria, Isr &c; D56 incl Greece (St Paul's path); D66(7pn) Abraham's wanderings & mod scenes Iraq-Egypt; Ja68(fdt, hist map) footsteps of Alexander: Greece, Turkey, Lebanon, Egypt, Iran, Afghan, Pakis; O40(f) caravan along anc silk rtes, Paris-Delhi; Jl58 & Ja59 Douglas trip, Iran, Iraq, Turkey; Mr46c incl Egypt; Ag65 Lebanon, Syria, Jordan, Egypt, Ja60 Iran, Arabia & eastward by plane; N25c2 O75 "Arab World, inc," where the oil is; S42 & N58 Arab world; Ap42 Medit; Ag41 wartime; Ap74 Yom Kippur war of O73; D63c2(8pn & fdt) 1st Crusade & attach on Jerus; D33c2 & Mr31 crusader castles &c, Cyprus, Rhodes, Syr, Tur; D26 mostly Syria; S42-2 duot, Arabia; S26 air phot

MINERALS. *(See also ARTS & CRAFTS; INDUSTRY: METALLURGY and MINING; and JEWELRY)* N51c & D50c beautiful & rare stones; F74(f) rockhounds carve jade, quartz, calcite, fluorite &c; Ja66 beauty in rocks (microphot); Ja74(f) gold productn & objs; O54c uranium ores; Ja79 diams: ming, processg, cuttg, selig, uses; Ap58 diamond; Ag66 uncut diamonds; Mr65 diam cutting, Isr; My74 same, Amst; Ag57 amethyst & agate jewelry making, N.S; O48c diam, quartz &c, Braz; F63 star ruby, Burma; O76(f) & S63 world's richest opal fld, Austl; N67 ming opal, Austl; N67 mining opal & S63 black opal, Austl

MINORCA. *See SPAIN; BALEARIC ISL.*

MISSILES. *See U.S. ARMED FORCES:Air Force; WEAPONS.*

MODELS, REPLICAS, TOYS. *(See also ARTS & CRAFTS)* My57 Mayflower II details; My57 Jamestown replica ships & huts; Ja58 Jamestown ships & Ft Sumter; Mr65 fullscale replica of Santa Maria in Barcelona; Ag63 model of frigate Squirrel lost at sea 1583; N60 da Gama's flagship; F75 & Jl38 reprod of Drake's Golden Hind; D41 Brit Admiralty m of Winchester(sank 1695); N50 Ige ship, Swed Marine Museum; Ja38 50' m of Nelson's flagsh Victory; Jl53 25 ft replica of Perry's Saratoga that opned Jap to W; F50c Miss sidewheeler Natchez; Ap48 another; S50c 4-masted barks; Jl61 1839 sloop of war Decatur; Je58 sail ships; Ag50c windjammer; Je68 sq rigger, Me; Je70 same, Nantucket; Ap44 model ships, whaling museum; My52 ms of windj & armd frig, Ger; Mr60 canal boats; My40c brigantines

D27 Jerus temple, 1000 BC(Solomon's) & 530 AD; D67 anc Jerus; O38 & D35 anc Rome in'Augustus' day; Ap58 Phoenician temples; O68 Aztec cap, Tenochtitlan; N78 Court of Gt Mogul, elab Ind palace scene by 18th c goldsmith; S51 Globe Thea; Ja49 Ford's thea; Jl50c Ft Augusta, Pa, & barge; Ap32 San Fran str scene in 1850's; Ja37 Lond port; O60 Rotterdam rebuilt area; N50 Toytown, m of mediev Copenhagen; Ap79 old

Prague, m of 1834; Ag52 US Capitol; Ap67 table mod of Wash D.C. plan; Mr68 m of Mobile city plan; D45 Yokosuka nav base, Jap

N60 Lower Miss r & F55 delta formation; D62 tank creates 6-in waves to meas force; Ap68 m of Dutch dam & delta

Ap55 human anatomy; D53c giant human heart; Jl51c silkworm; S64 decoys for geese

Ag63 Disneyland life-size animated figs of US presidents; D59 dolls of world; N74 Pinocchio wood doll, It; My37c2 toy-size town in Eng; F74 miniat world of towns, Legoland, Denm; N48c toy hse, Children's Pk, Port; O54c colonial gristmill; O56 stagecoach; Je58 locomotive (Pac type); D44c lge model locomot, Siberia; Je54c Shasta Dam mod; S55b m oil derrick studies, Indon

MOLDS. *See MYCETOZOA.*

MOLLUSCS. Mr65(52 col) tree snails, Everglades; 056b shipworms. *(See also FISH: Snails)*

MONACO. Ap63; Ap67 pt

MONGOLIA. *(PEOPLE'S REP; OUTER MONGOLIA)* Mr62 (W.O. Douglas)

MOON. *See ASTRONOMY and SPACE FLIGHT.*

MOROCCO. Je71(fdt); F55; Je35c2 esp Fez; Jl43c2 esp Casablanca; Mr25c2 Mr32c2 esp S.M; Je68 Berber tribesmen & Atlas mts

MOSES. Ja76 flight fm Egypt retraced; relics; excell map

MOZAMBIQUE. *(PEOPLE'S REP.) Ag64*

MUIR, JOHN. Ap73 M's America, preserv of wilderness

MUSEUMS. *See INSTITUTIONS.*

MUSHROOMS. My20c(16pn) of US; O65(pn of 30) lethal & harmless m of US; Jl71 bioluminescence

MUSIC & INSTRUMENTS.

Music. Ag51 W Afr folk music; O61 Mex folk mus'ns; F47 Hebrides folksongs; Mr68 Gaelic song fest (ceilidh) Scot Highlands; N74 same, Hebrides (accordion & violin); Je68 quartet; opera & ballet, Stadt Park concert, Vienna; Ja38 Royal Op Hse, Budapest; Ja70 Berlin Philharm & marchg band; Jl69 Swiss yodelers; Ja51c Bali orch; F66 Austl aborigines playing cowboy songs; N64 Peking opera performers in costume, theat; Jl64 Aida at Metrop Op, Lincoln Cent; S74 Weimar's Liszt Coll of Music, boys choir, Leipzig; folk singer of E Ger; Ap 75 Mormon Tabernacle choir & organ, Utah; D66 Cape Cod Melody Tent, Hyannis; harpist & brass choir, Tanglewood; Ag70 Berkshire Festiv, Tanglewood; S68 Newport Jazz fest; Mr71 Quebec summer concert; Mr79 Denver symph orch hall-in-round; Ag69 concert in 1500 seat amphitheat, Colo; ragtime piano player; S72 old-time bandstand on green, N.H; My78(f) Nashville's Gr Ole Opry Hse & performers; Ag76 Ervin Rouse at country m festiv, Fla; Je73 rock band causes hearg losses; F71 N Orl tradit jazz band; O62 Hollywd Bowl Easter sing; D59b Sousa's band; N75 folk songs recorded in Lib of Cong; Ag76 Rostropovich conductg; F79 & S63 Sydney Op Hse, int & ext; Mr76 Sic street balladeer

Instruments. D68 colon Wmsburg fife & drum, marchg band; sackbut (early trombone) & serpent early tuba?); F68 concert, Prague, 17th c harp & 14th c chrotta; Je31 var is of Ethiop; Mr35 is of band, Nepal; My41 comb str & drums, W Afr; My65 mizmaar, anc pipe, Eg; O65 horns of lamas; F51 horn of giant kudu, Sudan; F66 pututu, Boliv bull's horn; F77 narh, 3' flute of Ind; F71 & O50c Quechua Ind flute Peru; Ja79 & Ja66 jakui, Braz Ind sacred "magic" bamboo flutes; My62 & O55 miramar flute & drum players, N Guin; S73 sacred bamboo flute, N Guin; O66 & Ja50c Tibet trumpet of human thighbone; D52 copper "telesc" horns, Bhutan; O66 15-ft horn, Nepal monast; O & Ag50c Alpenhorns, Switz; Je52 surnay horn, Iran mts; Ap77 Himalayan lute, Nepal; Jl52c, My46c, Ag35c(Scot), Je64 & My40 (N.S.) & S66(Alta) bagpipes; Ap72 goat-headed kobza (Pol bagp); O75 Arab bagpipes; Ap74 Tuareg anzad, leath-cov calabash str w horsehair; Ap65 washint & makinko (flute & 1-str violin) Ethiop

My55 47-bell carillon organ, Bruges; Ap38 bells mfd, Belg; Mr69 pyenchong (battery of 16 bronze bells) Korea; S52c harpists, Me; Ja71 Java gambang like xylophone; Ja51c xylophones; Bali; My41c same, W Afr; Mr39 metallophones, trompongs, Bali orch; F70 Lebanon oud like lute; My76 handmade violin of Mex Ind; Ap73 & D48 tchr perf on sitar(teak & gourd instrum, Ind); My74 2100 yr old Chin instr, zither & mouth organ; Mr31b street musicians, W China; N64 erh hu(Chin fiddle); Je75 guitar maker, Cordoba; Mr78 Segovia w guitar in apt, Madrid; Je42 bamboo guit(valiha), Madag; S66 bandurria, Philipp str inst; F63 saunggauk, Burmese harp; Jl75 18th c armonica as played by Franklin; N50 Afghan 20-str sarungi; O64 8-str gares, Cambod; F67 Viet oboist; F60 skin-covered drum of Pygmies; S68 gazelle-skin drums, Afghan

Ag68 violin made by Mex Ind; Ja49 violin maker, Ger; Jl51 & Jl42 Kentucky-made dulcimers; My74 Ky folk singr & dulcimer he made; O68 dulc made & played in Tenn; Mr74 manuf violins, Bavaria; N70 home-made violins, Ozark mts; N74 80 yr old fiddler, Va; Galax conventn of mt music makers; Mr50c Wayside Inn spinet; S35c same, Del; Ag37 Kan organ pl; Ap39 Steinway pl, NY

MUSTANG. *See INDIA: Nepal.*

MYCETOZOA. *(MOLDS).* Ap26c(16pn)

NASA. *See SPACE FLIGHT.*

NATIONAL GEOGRAPHIC SOCIETY. Ap18 in wartime; Jl18 ward at Am Ambul Hosp, Neuilly; Ja36 its work & mag; O67, Jl54 & Mr57 new officials; Mr60 J.O. LaGorce; D60 new publishing pl; D61 new bldg, globe & plans; My42(f) map-makg; Ja68 filmstrips; Jl75 N.G. World replaces its Sch Bull in S75; Ap62 Byrd memorial dedic; Ja63(4pn; fdt global map) 75 yrs of expeditions; O63 Grosvenor's hist of Soc & mag; O66(pn) life of Grosvenor & hist of mag; My64 LBJ dedicates new Hq bldg; Je66 new ed of atlas; Jl65 Elsie May Bell Grosvenor; Je67 first LaGorce medal to Antarct Mtneering Exped; Ap68 obit of R.V. Fleming, trustee; D70 F.G. Vosburgh retired as editor; Ag76 R.E. Doyle 13th pres

NEAR EAST. *(See MIDDLE EAST).*

NEPAL. Mr60; Ja50c; Mr35c2; F79 Kathmandu & Newars; O20 esp bldgs & Jl57 coronatn; Ap77(f) sacred Crystal Mt; Mr79 Annapurna climbd by 10 US women; 2 lost

NETHERLANDS. Ap68; My74 Amsterdam; S54c incl reconstr; D50c; S33c4(2c) incl Zuyder Zee reclam & tulip time; F40-2 duot; Mr23-2 duot; Ja15-2; D46; F46 & Ag44 home front; O60 Rotterdam reborn

NEW ZEALAND. Ap62; Ap52c; F36c2; Ag74 N Isl; natv customs, Maoris, agric; Ja72 So Isl; Ja78 hike thru S Isl's Fiordland Nat Pk; Ag78 S Alps on S Isl; Ap42c2 Anzacs(pt Austl); Ag25 hot spring country; Mr16 pt

NICARAGUA. Ag44c; My32; Mr27

NIGER. Ag75(pt N); Ag66(brf); Ag79(f) the Inadan, artisans of Tuaregs; Ap74 ravages of drought; N65 Tuareg(Berber) cameleers transp Bilma salt to south

NIGERIA. Mr79; S56; Ag59(14pn) pt N(Kaleri, Mada, Fulani, Kano Moslems &c); Ag53c(pt) Kano; My44-c2; F62 Mercury tracking station

NOMADS. *See ARABS (SAUDI ARABIA & NEAR EAST), ESKIMOS, KASHGAIS (IRAN), LAPPS (FINLAND), MONGOLS (RUSSIA).*

NORWAY. Jl71; Ag48c esp vivacious Oslo; Ja57; Ap39 c2, Jl30c2 & My35 all fiords, folkways, rural life & costumes; F64 Hardanger Fiord; LBJ flight; N53 native's return to Mandal; Je24-2 incl Viking relics; Ag54c S coast cruise; N45 & Mr43 wartime; Ag78 Spitzbergen isl; Jl48 Spitzbergen coal; Jl71 & Mr47 Lofotens cod fishing; Ja48c seal hunting, Jan Mayen; Ap77(f) drillg for N Sea oil, refinery; pt N; S77(f) N's reindeer Lapps

NUMISMATICS. D27 geog of money; Ag74 anc Phoenician coins of Spain 3d c BC; My77 Celtic coinage of 3d c BC(Macedon); S66 anc Grk dolphin coin; Ja68 silv coin of Alexander; Ag33 silv coins anc & mediev; Ag66 coin of Wm Conqueror; Ap70 Viking ships on Vik coins; Ja74 famous gold coins of hist; Ja74 mintg gold coins, Switz; Je77 Ige gold Krugerrands of S Afr; Je69 gold & silv coins of Chas V &c fm Span Armada wrecks; D & F67 pieces of 8; Je76 Colombia-minted coin of 1621; D79 & Ja65 Sp gold & silver fm wreck of ca. 1700; Ag75 coins of 1724 Dutch shipwreck; S35 silv thaler 1780; S37 platinum coins of Russ; Jl51 wooden nickel coll; N67 Austl coins; Ag69 US Mint, Denver

OCEANOGRAPHY. *See subh of PHYSICAL GEOG.*

OMAN. *(Indep. 1970; formerly Brit.)* F73 land of frankincense & oil

OUTER MONGOLIA. *See MONGOLIAN PEOPLE'S REP.*

PACIFIC ISLANDS. Collective: Mr51c(New Guinea, New Hebrides &c); Ja42c2(Galapagos, Easter, Pitcairn, Solomons); Mr34c2 (Solomons, New Caledonia &c); D74(4 arts, 7 pn) Polynesian discoverers & early migratns, hist & civiliz; O25c Polynesia; Je42-2 Australasia & Micronesia; O68 teen-ager sails alone to Fiji, Samoa, Solomons &c; Ap36 Jap Micronesia; My67 Amer Micronesia; Ja44 US armed forces in New Caledonia, Solomons, Fiji; O44c2(19pn) springboards to Tokyo; Jl39 & Ag37 mostly Pacif; D36 aeronautic

Historical. S71(fdt pn of his ship & 3 maps) & Ja27 Capt Cook; My46 Amer pioneers

Bikini. Jl46

Bonin. Jl68(feat) incl Volcano isl, chfly Chichi Jima & Iwo Jima

Borneo. *(See also main entry MALAYSIA)* S45; N63 & F19 Sarawak & N B; F74 Brunei (UK sultanate) & its indus

Bougainville. Ja45c

Canton. Ja55; Je38c2

Carolines. Jl48c pt; My76 Truk; coral invades Jap ships sunk '44

Cook Isl. Ag67

Easter. Ja62; F44; D21; Ja42c2 pt

Espiritu Santo. Mr34c2

Fiji. O58; Jl50 copra; Ja44 pt

Galapagos. Ap67(fdt; pn R.T. Peterson) & My59 esp wildlife; Ja42c2 pt

Gilberts. F45c(Tarawa, Makin &c); Ja43

Guam. Jl38

Hawaii. *See US. HAWAII*

Ifalik. Ap56 atoll, anthropology

Iwo Jima. *See BONIN above.*

Kapingamarani. Ap50c feast day

Lord Howe. Jl35 (Tasman Sea)

Marianas. Ap45c(Saipan, Guam, Tinian)

Marquesas. Ja50c; O19; Ja41 (Heyerdahls on Fatu-Hiva)

Marshalls. S45c; Jl48c pt; Ja48c Kwajalein atoll; Jl46 Bikini

Micronesia. My67, Jl48c(US Mandate); Je42 Jap M *(See also above, COLLECTIVE; also CAROLINES; MARSHALLS; MARIANAS)*

Midway. Je64 good views incl gooney birds

Nauru. S76(f); D21

New Britain. F61; Je66

New Caledonia. Jl42c2; D74 pt; Mr34c2 pt; Ja44 pt

New Guinea. S73(Sepik riv regn), Ap53c(77 in col) incl birds; My62; Mr72(Asmat tribe), Ap & Jl69 natives & adornment; Jl77 Gimi peop & fertil rites; O55; N51c; D59 pt; Mr41; D45c; D49 sheep airlift

New Hebrides. Ja72; My74 Tanna; Ag44 wartime; Mr34c2 pt; D70 & Ja55 land divers

Niuafoou. Jl35 mid-Pac volcanic isl

Norfolk. O60 "Bounty" descendants

Okinawa. O45c, Ap50, F55 rebuilt

Orchid. *See Taiwan.*

Palau. *(U.N. Trust Terr.)* My67; Jl78 coral reefs

Papua. S29(99 il); Ja27

Pescadores. F56

Philippines. Mr77; S66; O40c2; N44c2 esp Mindanao; S30 air phot; F42; Mr45 Luzon; Ag71 mt tribes of Mindanao; Ag72 Tasadays of Mindanao, Stone Age cave men; My76 sea gypsies, Bajaus of so'most isl; N33 Sulu archip; Je76 Magellan's explor

Pitcairn. D57; Ja42c2 pt

Ryukyus. My45 *(See also OKINAWA above)*

Samoa. O62 new nation of Western S; My41

Sarawak. *See abv BORNEO and main entry MALAYSIA.*

Society Islands. *See TAHITI.*

Solomons. Ja45c; D42; Ja44 pt

Tahiti. Je79 T & beyond; w smaller isl in French Polynesia (Society Isl); Jl62; Ap62 incl Takaroa

Taiwan. Ja69, Mr57, F50c incl Taiyal aborig; Ap55b, Ja45, Mr20, F56 Pescadores; Ja77 Orchid isl & Yami natives

Timor. S43

Tonga. Mr68-2 genl & coronation; D74 pt; Mr34c2 pt

Tongareva. S38c2(8pn) pearl lagoon

Truk. *See CAROLINES.*

Trust Territ. of the Pacific. *See MICRONESIA above.*

Volcano Isl. *See BONIN above.*

Wake. D36 flyg the Pacif

Yap. D52c; Mr46c; My67; D21 pt

PAGEANTS. *See FESTIVALS &c.*

PAKISTAN. Ja67; N52c, N75 Hunzas of Karakoram Range; Ja77(f). NW frontier: Pathans of Khyber Pass; Mr55 E P agric & econ; My79 Amer ascent of K2, world's 2d highest mt *(See also INDIA, BANGLADESH for E P.)*

PALEOZOOLOGY. *See FOSSILS*

PANAMA. Mr70(fdt, aerial phots); F78(map,diagrs) P canal today; treaty lines; N41c2; Mr61 Darien Gap & jungle Indians; Ag53c & F50c & Mr49c archaeology; F51c2 San Blas Indians

PAPER. *See subh of INDUSTRY.*

PARAGUAY O43c2 col art on P, pt Braz; Ap33

PAUL, ST. D56(f) Jerus-Rome in P's ftsteps

PEARY, ROBERT E Ap20-2

PERRY, MATTHEW C., *commodore.* Jl53c(f) openg of Japan

PERU. *(See also ARCHAEOL for more detail and INDIANS, SO. AM.)* F64; O50c; Ag42c2; Je30c2; F71 Lake Titicaca(feat); F27c pt, Andes & Altiplano Inds; Ja34 Colca vall; Ja33 air phot, Cuzco-Machu Picchu region; Ja67 same, pt; Ag64 exploring Vilcabamba region mts; F38c2(10 pn), D73(5pn, fdts, drgs; Cuzco) & Mr73(3pn, diag, Chan Chan) Inca civiliz'n; My16-2 & F15(Bingham expeds) & Ap47c archaeology; Ja55 Aymara Inds; Je62(pn) village wiped out by glacial avalanche; My46 llama & alpaca; Mr59 guano fertilizer indus

PHILIPPINES. *See PACIFIC ISLANDS.*

PHOENICIANS. Ag74(5pn) sea lords of antiquity, traders, navigators, explorers

PHOTOGRAPHY. Mr78(pns,fdt,synoptic chart, mphos) surv of scient applics of p: visible light, radio waves, IR, ultraviol, x-rays, gamma rays; astron p, SEM, CCD's, Landsat, stereo, brain p, &c; Jl54c incl diagrs, TV; S54 Eastman; O63 devel of color processes used in Nat Geog; My61 early daguerreot; Ja66 microphot, rock crystals; F77(f) SEM (scanng electron microscope); My & D66 laser-produced 3D pics; Ja69(f) remote sensg: infrared, radar

Photography, Aerial. *(See also PHOT., CARTOGR. & INFRARED)* N67 col phot of earth fm 21,000 mi; S69 Cape Hatteras fm Apollo 9 130 mi; O69 Pacif atolls fm Apollo 7 120 mi; Mr71 heat photog of Ga coastal isl fm Apollo 9; Ag60 earth fm Tiros 1,450 mi; F65 photos of earth pole-to-pole & W Eur fm Nimbus 1; S65 earth fm Gemini 4 at 100 mi up; N66 many views of earth surface fm Gemini 7, some in Ap66; F62 earth fm Mercury satell; O50c earth fm V-2 rocket 80 mi up & Rio Grande fm 60; My36 highest phot yet, 13 mi over SD, F35 11¼ mi hi phot of Neb farms; Mr33 stratosph ballooning(Piccard) & D26 stratosph flight (Macready)

F57 special cameras of Coast & Geodetic Survey; S44 war uses; Mr45c 1st D-day phot over Fr; Je40c aerial col phot in war; S30c first air col phot success; S65b used in archaeology to detect anc sites, buried tombs &c; O50 geom patterns found on Peru desert, made by pre-Inca Nascans (as calendar?); Jl64b used to remap Alas quake areas, Seward & Turnagain; N32 eclipse fm air; Ja69 thermographs or heat phots of cities, crops &cl; Ap78 locatg kelp beds by IR, Cal; *EARLIER AIR VIEWS:* Ap32 Arctic to Equator; My31 Andes; S30 Philippines; O27 Latin Am; Mr25 Europe

Photography, Astronomical. N63(pns) solar eclipse fm jet *(See also ASTRON: SOLAR SYSTEM*

Photography, Cartographic. *(See also PHOT., INFRARED)* Jl76-2(f; pns) Landsat maps US by "near IR" phot; O74 earth's phys geog phot fm Skylab: Colo, White (SD) & Salween(China-Burma) rivs; La Gulf coast, Str of Gibraltar, S It, Sinkiang prov, China; F57 Coast & Geodetic Survey; S44 war uses; O53 locatg N Pole; O32 mapping Antarc; Jl64b used to remap Alas quake areas, Seward & Turnagain; O73 lower Col r; Ag73 Gt Lakes regn fm space; O47 mappg Antarc, Byrd exped; F69 mapping moon; N76 & Ja69 thermal mapping (e.g. of Gulf Stream fm weath satell); side-looking radar maps areas of permanent cloud cover *(For moon mappg see ASTRONOMY)*

Photography, High Speed. Ja63c2 & N60 (Greenewalt) hummingbirds; Ap61 bat's "radar" flight; Je48c birds in flight; Je63 bullfrog in leap

Photography, Infrared. Ja69(head) & Ag71 (hand) heat picts; N79 IR phot of cactus; Mr74 aerial IR phot of algal bloom, Potomac r; Ap78 locatg 3 mi kelp bed, Cal; O74 San Fran Bay area fm Skylab & Chesa Bay area; Colo r vall & undersea phot & oth IR phot; N76 IR port of Gulf Str fm satell; Mr71 Ga coastal isl fm Apollo 9; F70 heat phot of Imperial Vall, Calif, fm same; Ag71 Verdigris r vall, Okla; D70 AEC plutonium prod pl effluent into Columbia r, Wash; Mr70(fdt) IR phot of entire

Pananma Canal fm 31M; Mr76 IR phot of heat loss in hse

Photography, Submarine. *See PHYS GEOG, OCEANOGRAPHY*

PHYSICAL GEOGRAPHY. *(For extraterrestrial influences see ASTRONOMY)*

Atmosphere & Weather. Ap72(pns,drgs,diagrs) "doing somethg abt weath": atmosph disturbances, seedg hurricanes, tornados, rainmakrs &c; observatns, hail, smog; S46(f) new frontier in sky; radarscope shows hurricanes; D43 weath; D77(f, drgs, maps, satell phots) "yr the weath went wild": blizzards & record cold wint of '77 in E & drought in W; Ag25 cloud formatns; O74 hurricane & cloud formatns seen fm Skylab; F65 Nimbus 1 & Ag60 Tiros 1 weather-eye satellites; D43; Ap55 US stations in Arctic; D55 Coast Grd weath patrol; Je50(f) lightning; O67 ESSA 3, weath satell photo of a cyclone on Arabia's SE coast; My69 sand & rainstorm, Arabian desert, Kuwait; S68 mirage. Des of Death, Afghan; O78 sand hills formd by wind. Neb; Mr66 hurricane Betsy's havoc, La; F78 hurr Camille levels mansion, Miss; Mr74 tornado damage, Neb; D62(fdt air views) Atl coast hurric; O50 & Ap39(N Eng) hurricanes; Ag36 fog & storm at sea; O67 (diagr) offshore monsoon winds; F66 dust storms, Austl; N49 Ore snow survey; Ja26 sun's heat & forecasting; Jl47(av) rain producd by "seedg" clouds, Or; N47(8pn), N65, Ap69, Jl68, My39 aurora borealis; D70 effects of smog

STRATOSPHERE. *(10-45 mi up)* F57 Strato-Lab balloon up 14⅘ mi; F56 Internat Geophys Yr, Ja & My36 (Stevens) balloon up 13.71 mi, man's farthest aloft, 11/35 in Explorer 2; F35 NGS announces new strato flight; Mr37c 1st col phot fm strato; O34 report on fl 11½ mi up by Stevens; Jl34 world's lrgst free balloon to explore s

IONOSPHERE. *(45-600 mi up) (See also SPACE FLIGHT)* My62(pns, diagrs) Teistar operns; N65(pns) layers of atmos &c & penet by sun's rays; Ap56(4pn), Ap57 & S46 V-2 rockets probe i

Caves & Caverns. *(See also EROSION below)* Je64 (3pn) formation of a cave, many caves across US; S70 (fdt) & O53c Carlsbad caverns; Je50c Lewis & Clark cavern, Mont; Ap70 Natrl Bridge & Luray caversn, Va; Jl42c Mammoth C chamber, Ky; Jl49c Grand Caverns, Va; Mr78 Blanchard Spr cav, Ark; S67(brf) Russell C dedic, Ala; Mr75(pn) 6 mos alone in Tex cave; F65 cave in Peru; Mr53 Pyrenees ice-caves; O79 Reed Flute cav, China

Climates. N76(f, pns, maps, fdt, diagrs) worldwide view & hist of climates & chf causes; atmos polluti n

DESERTS. N79-2(fdt,world map) desert regions of world; reclam of land at d rims &c; My58, F49c, N65, S42, Mr37 & S24 Sahara & Arabian; Ag73 shiftg Sahara dunes, Alg; Ag52 shiftg dunes swallow oasis, Alg; O72 sand, dunes(balchans) on salt beds migrate 50' a yr, Baja Cal; N67 W Sahara; land-yachting; Ap74 drought in S Sahara, Tuareg world; Ja66, Ja60 & S42 Arabian; My69 sand & rainstorm, camel caravan, Kuwait; S68 Des of Death & mirage, Afghan; Mr63, D45c Ariz; Jl57 & Ag35 gypsum d, Alamogordo, N M; Ap64 Gt Salt d, Utah; Ja70 Death Vall, Cal; N57, Je54, My71 & N34c Calif; Je74 sagebrush, Gt Basin, Nev; N72 Brazil's arid Sertao regn (E tip of continent exc coast); F77 Gt Ind d, Rajasthan; Je33c2 Gobi, Mongolia; Je63 Kalahari d, S Afr; F66 Cent Austl d; Ap70 sand ridges, S Austl; N66 US, Sahara & Arab d photog fm Gemini; F70 Danakil Depressn, Ethiop; Ap30 SW Afr; Ap53 locusts

MEDITERRANEAN CLIMATE. My49c SW Calif betw Sierras & Pacif; Jl41c Cent Chile; Ap50c Sp incl agric; Ag42c Capetown, S Afr

MONSOON CLIM. O67(diagr) monsoon winds of Ind Ocn; Ag30 & F63 Burma; N46 Ceylon; Mr45, F42 & O40c Philippines

PLATEAUS & UPLANDS. F66, O50c, & Ja55 Boliv Altiplano; Mr31c2 Chin Turkestan; F30 Tibet; N50c Afghanistan; Ag51c & Jl46 Colorado; S60 Ethiopia; F75 plateau of W Austl

SAVANNAS (VELDT). My47c llanos of Orinoco vall, Colomb; Ag76 same, Cent Venez; O43, S62, O42 campos of Braz (Mato Grosso); Ja34, F53c Sudan region; O67 cent Madagascar

TAIGA. *(SUBARCTIC EVERGREEN FORESTS)* Jl68, My42c, Ag55 Can Yukon & Arctic Ocean; N76 Alas pipeline; Jl59, Je65, O40 &c S Alas; F76 & D44c Siberia; Mr67 permafrost, Sib; O38c2, Ag54c Finland; Ap63, O28c Sweden; Ap39c2 Norway; F60 S Chile

TROPICAL RAIN FOREST. Ap26 Amazon vall; S52c Colombia; N30 Brazil; Ag76 Venez; N31 Orinoco r; N75 Martinique; Jl65 C Rica banana plantatn; Mr55 prim agr of Wai Wai, Br Guiana; Mr52c, Ja60 Congo; S55, F30 Sumatra & Indonesia; S45 Borneo; F42 Philippines; O55 New Guinea

TUNDRA. Mr72-5(pns,drgs &c) 5 arts on Alas t: prehist, plants, birds, mammals, phys feats, permafrost &c; N76 Alas pipeline thru t; Jl49c, N39c Finnish Laplanders; Ja47c Canadian caribou Esk; Ap51 Aleutian Esk; My64 Esk of Banks Isl, Arct Ocn & O71 of Pt Barrow region, Alas; Ag46 Jl55, F30, & O65 Tibet & Nepal

Coasts

EMERGENT, SANDY COASTS. My33c & Ja60 NJ beaches; Ag62 Cape Cod; Je61 Martha's Vineyard; My35 Old Orchard, Me; S69(fdt map) & D33 Cape Hatteras & Outer Banks, N.C; S47c(f) gt sand barrier reef, Va-NC; Je77 wide sands of Mt St Michel; Je67 Riviera; F54c Bermuda beach

SUBMERGED, DROWNED COASTS. My59, Ag43c Normandy & Brittany; Ag61 Cornwall; My40, S45c New Eng, Je68 Me coast; Ag35 headlands, Gaspé penin, Que; D79 Ore coast; Ap60 Puget Sound; My66 rock-ribbed coasts, Calif; S67 cliffs, Jap coast

FIORD COASTS. Ja57 & Ap39c & My35 Norway; Jl71 Geirangerfjorden; Ap62 N Zeal; Je65 Alaska

MISC. D62 effects of storm; S15 & Je18 Atl seaboard; Je72(fdt,pns,drgs) savg our wetlands; S72 tidal creek, Ct marsh; Mr53 tidal basins, S C coast; My51c limestone shore undermined by tides, Aran Isl, Irel; Mr52c coral cliffs, Barbados; Ap45, Ag40 & Ja44 Dover chalk cliffs; Ag61 (Cornwall), Mr68(Scot), My40(Ire) & Je61 (M's Vineyard, clay)cliffs; N61 Ore coast; Ap69 & N62 Cape of Good Hope rocky promontory; S65 Sable Isl off N.S., shifting sands, veget, hydrographic map & chart of wrecks; F79(2p av) swampland at N Austl coast; Je61(M's Vineyard), Ag62(Cape Cod), Je65(Del; wildlife) dunes; Je65 Homer Spit, Alas; Ja76 sand spit in Medit possibly crossed by Moses; N77 sand spit, Ga coast; S54c Holland sea floods & dikes; D74 beach of

dark volc sand, Hiva Oa, Marquesas

O72 tidal bore 12' high, Amaz r; Mr75 same, Bay of Fundy, NS; N44 Fuchun tidal bore, China

Continental Drift. *See subh EARTH'S CRUST.*

Deserts. *See subh under CLIMATES above.*

Earth as Globe. N67 col phot fm 21,000 mi; Ag60 seen fm Tiros 450 mi alt; F62 seen fm Mercury capsule; S65 seen fm Gemini 4, 100 mi alt; Je68 Alt area fm 22,300 mi; My69 Carib fm Apollo 8, 3500 mi & W Hemis fm 20,000 mi; N66 views of earth horizons fm Gemini 7; O50c seen fm 80 mi up; My61 & D61 NG Soc new globe

Earth's Crust. *(See also subh EARTHQUAKES; OCEANOGRAPHY; VOLCANOES)* Ja73-2(pns,maps, models,relief maps) this changing earth: continent drift; rifts, faults, volc &c; Ja52 lithosphere, volcanoes, quakes, faults, basaltic rock; O67 Ind Ocn rift in earth's cr; Ag65 anoth great rift fm Syria down thru Red Sea to SE Afr; Ja73 Danakil Depressn, Arabia torn fm Afr; (2d art) (maps,air phot, model) San Andreas fault, Cal; '71 quake in L A; S77 San Andreas Fault line (map & air phot); Je76 relatn of Guat quake of '76 to continentl plates; Montagua fault; My75(pns,fdt) Project FAMOUS studies MidAtl Ridge, where Am continent parts fm Eur & Afr; Ag76(f, pns, diagrs, rel map) submersible Alvin explores Carib Cayman Trough 23M' down; "pillow lava" on sea floor; O77(f) thermal vents in ocn floor (Galap Rift) at edges of continentl plates; world map of contin plates (see also Ja73); N79(fdt,pn,diagrs) Alvin returns to prev sites; life at ocn floor vents at Galap Rift & 21 N lat

N61(4pn) Project Mohole to drill thru crust; N76 ice cores & sea cores to study hist of climates &c; O46 & Ja52(Scot) & O46(C Rica) basaltic lava upthrust; Ag64 & N35 basalt shafts on Giant's Causeway, N Irel; N30 basalt cliffs, Faeroes; My70 350-mi limestone massif of Dinaric Alps, Yugo; O79 limestone cliffs, China; Jl67 (Utah), Ja59b(Antarc) & F66(Cent Austl) sedimentary rocks; F66 folded mt range, Macdonnel Ranges, Austl; Ag69 & Je52c(Utah) ramparts of red sandstone & Mr54 folded rock layers, Colo; Je50c overthrust fault strata, Mont; O79 upthrust vertebrae of Contin Div, Mt; Mr54 spectacular foldg of Steamboat Rock, Col; Ap52 flapjack tiers of limestone rocks, New Zealand; O78 limestone spires, Djibouti; Ag32 limestone crags, Bulg; Ag77(f, pn) effects of Ice Age in Wis; drumlins, lakes, wetlands, rock deposits

Earthquakes. Jl64-3(3pn) 2 art on Alas quake of Mr64 & 1 on cause of quakes; Ja52 genl art on qs, volcs &c; Mr60(pn) scarps, rifts, faults in Montana q; Ja73-2 qs draw boundaries of driftg continents(segments of crust); (2d art) (air phot, model) San Andreas fault & '71 q in L A; S19 shattered of Cent Amer; Je76-2(f; maps, pns, diagrs) Guat q of '76 & effects; relatn to contin plates, can we predict qs?; Jl73 1953 q on Grk isl Zante & demolishd port rebit; O67 Ind Ocn rift in earth's crust; O23-2 Tokyo q & causes (Japan's worst); Mr52 caught in Assam-Tibet q; Mr60(pn) Montana q; F60 drowned city of Port Royal, Jamaica(fdt pn & drgs); Mr52; Ja15 some historic qs

Erosion. *(See also CONSERVATION; AGRIC: METHODS; and subhds CAVES & CAVERNS, COASTS and RIVERS: Erosion)* Jl78(f), My69(fdt; pns), My55(w x-sec map) & My24 Grand & O58 Bryce canyons; My55 Gr Can w x-sec & Geol Surv maps; Jl71(feat), Ja54(f) & My62 Utah's canyonland; Jl67 Glen Canyon, Ut; O70 Red Deer riv gorge badlands, Alta; S53 Chiricahua Nat Monum, Wonderland of Rocks & Cochise Head, Ariz

Jl62 eroded pinnacle of volcanic pumice & origin of Crater Lake; Ag69 ramparts of red sandstone, Colo; Ag73 e of Lake Mich shore; Jl32 natrl br in makg, Col; Ap70 Natural Bridge & Luray cavrns, Va; Ja66 wind-carved sandstone towers, Arab desert; D39c2 volc cones, Cappadocia; Ja39 troglodyte storehse, Tur; S63 wave-shaped rock carved by wind & rain, Austl; F66 Ayers Rock, cent Austl desert; S73 limestone cliffs eroded by sea, Corsica

D47 effects of erosion on Greek life & agric; Je45c China fights e w US aid; My38 treeless hills, China

Fiords. *See COASTS.*

Floods. *(See also subh RIVERS)* S54 & F40 sea floodg, Neth

Frigid Zone. *See ARCTIC and ANTARCTIC.*

Geomagnetism. O67

Geysers & Hot Springs. My72, D78, N51c & Je40c2 Yellowstone; Ap66(fdt) Old Faithful g; My66 fumaroles supply steam power for generators, Geyserville, Calif; Je71 Lassen Volc Nat Pk geysers & hot springs; Ag69, N45c & N51 Iceland; g heat city & grow hothouse crops; N51 Icel pub laundry & pools; Ag74, Ap62 & Ag25 N Zeal

Glaciers & Icebergs. N76 movemt of gs in Alas (Mt McKinley) & Aus Alps & world map of Ice Age 16M BC; Ag77(pn) effects of Ice Age in Wis; Mr35(Mt Crillon), F48c(Mt St Elias) & Ag53(Mt McKinley) Alas; Jl38(duot; Washburn) mts & gs of Alas; Je36(f) Mt St Elias area gs; Kaskawulsh &c; Je65 Glaciological Studies Inst, Juneau Icefield; creation of lake fm melting g; Mendenhall & Sherman g, Alas; F79(2p av) Columbia g & bergs; F67(drgs) other great g of Alas; Je75 Nabesna g, Alas, huge riv of ice; Jl33 Taku g, Alas; Jl53 men & women climb gs on Mt Rainier & Olympus, Wa; My56c G Natnl Pk, Mt; My68 N Cascades mts (proposed natl pk) Wash; S66 & Ap25 Columbia icefield, Can Rockies; Ap64 Berg g, B C; Ag67, Ja56b & O51c Gr'land icecap; S42 Frederikshaab g, Gr'land; Ja45 nat bridge in giant berg, Gr'land; Ap53 3 mos on Fletcher's ice isl near N Pole; Je68 ice patrol, US Coast Guard; F65 ice isl Arliss II, N Polar sea; O51c & Jl26 icebergs & floes; Ja67 Moreno g, Argentina's Los Glaciares Nat Pk; Je62(pn) glacial avalanche, Peru; O73 g meets sea, Chile; Ja69 g depth studies by radio sounding fm air

Ja75 map of Ice Age Eur 37000 yrs ago showg extent of gs & shallower seas; N39av Storglaciaren, vast Swed g; Ap32 Konow g, Spitzbergen; N51c Iceland's gs; S65 Marteratsch g, Alps; Ap67 Rheinwaldhorn g, Switz

Mr32 gs at meetg of China, Ind, Russ & Afg to Oxus & Tarim rs

Ap62 Tasman g, NZ; F36 Fox g &c, NZ; Mr64, O59 & Ag56 Antarc

Ionosphere. *See subh of ATMOSPHERE above.*

Islands. D74 coral atolls of Pacif, coral reefs of Raiatea in E Polynesia; Mururua atoll & testg Fr A-

bomb; Rose Atoll Natnl Wildlife Refuge for green turtle; Je79(av) Bora Bora & coral atoll "most beaut" isl in world; Ja55(Canton), Ap56(Ifalik), Ap50c(Kapingaramangi), S45c Pacif atolls; Jl35 volc atoll; My76(f) Truk lagoon, sea life on Jap ships sunk '44; S38c2(8pn) coral atoll, pearl lagoon; My67 green atoll; Pac isl; Ag67 Manuae Atill or Hervey's isl fm air; O67 Darwin's "model coralatoll isl" & lagoon(Cocos i); S66 coral atoll, Philipp & volc i; Ja72 coral reefs on coast of Br Honduras; D65 uninhab Tobago Cays & reef; W Ind; Je73-3, O68, S30 Barrier Reef & isles; F54c coral-fringed Bermudas; Ja71(feat) Fla Keys

My65 Surtsey i born of volc off Icel; Jl73 destructn & My77 anoth sq mi added to Heimaey isl, Icel; new cone Eldfell; Ja73 Icel itself born as a volc isl; Je58(Ilha Nova, Azores) & Ja54(Myojin, S of Jap) births of volc isl (see also below VOLCANOES); My44 & Ag45 & O59 Ascension, volc i; Ja64, My62, Ja50c & N38 Tristan da Cunha, S Atl; Ja69 Lanzarote, Canary i of volc cinders & agric; Ja55b S Ga & fauna near Antarc; S65 Sable I, N S (hydrographic maps) shifting sands; 500 wrecks; S41c2 Lower Calif desert i fauna; N30 Faroes, volc chain

Lakes. *(See also INDUS POWER & LAKES, SALT below)* Mr67 Baykal, deepest in world, Sib; F71(feat) Lake Titicaca, Boliv & Peru; Mr75 L Nahuel Haupi, Andes, Arg; Ag67 Champlain; My77 NY's Finger Lakes; satell view; Ag77 Ice Age formd lakes, Wis; Jl68 many l near Arctic Oc coast, N Can; Je74 L Inle, Burma, filled by siltg actn of streams & choked by water hyacinth; S68 l self-dammed by mineral deposits, Afghan

Lakes, Salt. D58 Gt Salt L & Dead Sea compared; Ag67 life forms in Gt Salt L

Maps. *(See also PHOTOG., CARTOG.)* My42 Nat Geog Soc map production & Je63 new atlas (& rev ed Je66); My61 its new globe; Je43 milit maps(& My42); Mr56 mapping Latin Am, all-Am proj w Army Corps of Enginrs; N44 misc field wk; F57 & S44 aerial mosaic maps; My63 relief map, Mt Rainier area; O36 giant concr relief map of Guat; Ja45 relief m of Carib Sea area, US Hydrogr Off; S78 locatn of Jap explorer at N Ple by satellite; O32 Antarc mapped fm air; Jl76(pn) Landsat 1 & 2 observ satells; first color photomosaic of 48 states; S48(f) Army M Serv relief ms of ocean floor; Mid-Atl Ridge exploratn; O74 (Skylab) & Ag60 earth seen fm satell; D32 hist of maps; My57 John Smith maps of Va & N Eng; Je53c 6 early ms of Am colonies & west; N60 15th cent map of world(fdt); N75(fdt) map of world by shipmate of Columbus; Ja65 Eng 17th cent map of Carib area; Ap75 contemp Eng map of Lower Manhattan 1776; F73 aer mappg of Mars fm Mariner 9 since N71; Je75 mappg Mercury fm Mariner 10 Mr74-Mr75

Mediterranean Climate. *See subh CLIMATES*

Monsoon Climate. *See subh CLIMATES*

Mountains. *(See also SPORTS: MT CLIMBG; U.S. NATNL PKS, subhd VOLCANOES below, and the regional entries)* F48c Mt St Elias; Jl65 Yukon range E of Mt St E, Mt Kennedy; Mr35 Mt Crillon, Alas; Je75(2p av), Jl38(duot) & Ag53 Mt McKinley; Ap60 & My63 Mt Rainier; Ja69(fdt) climbg Mt Hood, Or; Je26 Mt Logan; Jl53 NW glaciers; My68, S66 & Je47c Can Rockies; O79(f) followg Contin Divide Mt-NM; Ap66(fdt) & D76 Gr Teton range, Wy; My66 Mt Shasta, Cal; Je54c Sierra Nev; Ja68 Chisos mts, Tex(Big Bend Natnl Pk); My69 (fdt,pns) geolog hist of Gr Canyon of Col

Ag49c Appalachian trail; Jl37 White Mts, NH; O68 Gt Smokies, Tn-NC; Ap70(f) Shenandoash mts, Va-WV

My76 Sierra Madre Occid, Mex; F64 Mt Arequipa, Peru; My31 Andes fm air; Je62(f,pn) terrib glacial avalanche, Peru; O73 Cordillera de Paine range, S Chile & Atacama range, N Chile; Mr75 Aconcagua, highest in W Hemis & Andes avs; D76 Torre Egger ascent, S Andes

Je65 mts of Wales; Je55, Ag34c2 & Ap32(avs) Swiss Alps; Jl69 panor of Jungfrau &c, Swit; Mr67, Mr56(f), Ag49c(f) & Mr53(ice caves) Pyrenees; F68 Tatra mts, Cz; Je78(2p) Mt Ararat, Tur

Ag52c & N55(Hillary) Himalayas; Jl54c(Hunt & Hillary) &c, *see also INDIA*; My79-2 asc of K2 Karakoram range, Pakis, world's 2d highest mt; Mr31c2 Turkestan plat & mts; N76 Chumbi vall, Tib; F30 Amnyi Machem range, China-Trib; Ag33(f) aer conq of Mt Ev; Mr63 Kanchenjunga, Nepal-Sikkim; My43(f) & O30c2 Minya Konka, China; D37 jagged limestone cliffs, S Chin; D60 & My50c Fujiyama, Jap

F66 Macdonnell ranges Austl desert; F75 Hamersley range, W Austl des, Ap70 Flinders range, S Austl; Ja72 Mt Cook, NZ's highest

Je67 & Mr64 Admiralty range & mts of Antarc

Mr62 Mts of Moon, Zaire-Uganda; Ap75 Kilimanjaro av & cinder cone; Mr50c(2p) Kilim; Je77 Drakensberg, S Af, av

Oceanography. *(See also sbhds ISLANDS & VOLCANOES & main hds FISHES & UNDERWATER SALVAGE)*

GENL. & SURFACE. Ja45 surface, floor, prods; S43 hist of exploratn; O67(2pn) Ind Ocn wind & water currents; "monsoon sea;" N76 Gulf Str in satell heat phot; Jl75 (old map) Franklin's study of Gulf Str; Ag57 giant tides of Fundy; My41 St Johns riv reversg falls, Bay of Fundy; D62 force of waves meas by model

UNDERSEA CRAFT DEVEL. *(Chronol. order)* Je31 & D34 Wm Beebe's bathysphere descends ½ mi; Halley's 18th c divg bell; Ja32 Beebe dredg for deepsea fish & D32 same w divg helmet, camera & notebk; S48 & N49c research ship Atlantis(Ewing exped) coring & dredg over Mid-Atl Ridge; O52c fishmen, undersea condits, Cousteau; Jl54 & Ap55 bathyscaphe (Cousteau); My55 aquascope steel divg chamber under Chesa Bay (Klingel); Ag55 oil prospectg under Pers Gulf (Cous); F56c2 undersea life, Ind Ocn (Cous); Mr56 Cous expl Romanche Trench, Mid-Atl Ridge; My58(pns) Houot's 59 trips to depths in Fr bathyscaphe; Ja60 bathysc in Jap Trench (Houot); Ap60 Calypso divg saucer (Cous); Ag60(pns) Trieste bathysc down record 7 mi in Mariana Trench(J. Piccard & Us Navy); Jl61 Amphitrite airborne undersea exped (Cous); My63 Link divg chamber tested; Je64(8pn & drgs) future of undersea explor by Link & (pns) down to Thresher by bathysc; Ap65-2 Lindbergh & Stenuit test Link SPID for 2 days at 432'; Ap66(2pn) Conshelf 3 livg under Medit 3 wks(Cous); Ja68 Link-designed Deep Diver carries aquanauts to great depths (Proj Man-in-Sea); Jl69 FLIP ship devel

at Scripps Inst of O, La Jolla; Ja71 Deepstar 4/5 mi deep on ocn floor off Fla; 9 ton minisub by Cousteau; Ag71(fdt,pns) 20 days under sea off Vi; also all-girl team tests habitat

OCEAN FLOOR. N76 sea floor cores trace hist of climates; N61(4pn) Project Mohole drillg thru earth's crust; S48 & N49c corers & dredgers over Mid-Atl Ridge (Ewing exped)

CONTINENTAL SHELVES. Ap78(fdt rel maps, diagrs) US cont shelves, E & W coasts; rev of exploratn; oil & gas drillg; fishg; Ap64(5pn) Cousteau explores cont shelf; Starfish House livg condits

CONTINENTAL PLATES. My75(pns,fdt) Proj FAMOUS studies fissures in Mid-Atl Ridge; Ag76(f) resrch ship Alvin explores Cayman Trough 23M' down in Carib; O77(f) same explores life on ocn floor at vents of cont plates; Pacif off Ecua (Galapagos Rift); N79(fdt,diagrs) same returns to Galap Rift & 21° North sites; more life at vents

OTHER ASPECTS. Ja66 under Antarc ice; Ag73(pn) divg beneath Arc ice; Je68 ice patrol, US Coast Guard

Je67 & Ap63 Oceanographic Museum, Monaco (Cousteau)

Ja62 scuba divg in first US undersea pk, Key Largo, Fl; Ja64 same, photogr night creatures; Alligator coral reef, Fl; S70 scuba divg submarine caves, Bahamas

Peninsulas. Mr69 Door p, Wis; D79 spit along Ore coast *(See also subhd COASTS & regional entries, e.g. MEXICO for Baja Calif, or CANADA: QUEBEC for Gaspé p)*

Plateaus & Uplands. *See subh of CLIMATES.*

Rain. Ag52 fresh water; Ja23 snow & dew (microphot); O62 monsoon, Nepal; N76 cloud seedg for r, Minn; shift in r belt, sub-Sahara; N77 rainiest spot on earth, Kauai, Hawaii; D77 freak cloud-bursts flood K C, '77 ("once in 1M yrs")

Rivers. *(Examples of physical features; see also regional entries)* N66 r systms & deltas seen fm Skylab; O74 r types fm Skylab; Jl77(f) US Wild & Scenic Rivs Systms; 17 rs to be kept wild

MISS-MO-OHIO RIVER SYSTEM. F48 Ohio r floods; N45 Mo r floods; S71 Mo r dams, floods, canyons &c; S27 Miss flood of '27; N58 source of Miss; N47(f,av) confluence of Mo-Miss rs; 3 rs join to form Mo r, Mt; Ft Peck reserv/dam; O74 Ohio & Miss r at Cairo fm Skylab; N65 muddy Mo & Miss join at St Louis; F71 & N60 Lower Miss; Ja44(delta, av at Hd of Passes, La) & Je37 & Ap30(avs) Miss floods, levees, delta; S79 Atchafalaya Basin Floodway & Bayou country (wetlands conserv vs flood control)

DELTAS. Ag38av Mackenzie r, Can; F71 & N60 Miss delta region; Je37 hist maps of Miss delta deposits; Ja39c2 Rio Grande delta agric; S76 inland delta, Stockton, Cal; O72 Colo r delta, Lower Cal; O74 same w canyons & dams, fm Skylab; O72 Amaz delta (w tidal bore) & Ap26-2; N33 Amaz & Orinoco rs; Ap67(3 pic maps) Rhine fm Alps to delta in Neth; Ap68(pic map) & S33av Haringvliet dam & delta of Rhine and Maas; My73 Rhone delta, Camargue region, Fr; Jl65 & O77 Danube & delta lands; Mr77 Nile delta fm satell; D68(f,fdt) & F66 Mekong r & delta, Indochina; Ag76 Rio Tocuyo pours silt in Carib, Venez; F55b model of a delta

ESTUARIES. My41 reversg falls, St John's r, NB; Ap65 (pn) Rance r est dam, Brittany; O72 tidal bore in Amaz delta; S32c Hangchow bore thunderg in, Tsientang r, China

FLOODS. *(See above for Miss-Mo-Ohio system)* O39av flash f formg in Rio Grande, NM; F33(f) Manchurian floods of 1932; F42 fldg Hwang Ho, patchg dikes, China; Ap75 floodg Rufiji r, Afr, fm Skylab

MEANDERS, BRAIDING, FLOODPLAINS. Ag32 Forth r, Scot; D67 & D44 Jordan, Isr; S73 Sepik, New Guin; D79 creek braidg acr ice flds to Canning r at Alas N shore; Je72 Willamette r, Ore; Ja72 Kissimmee r, Fla Ev'glades Ag76 Orinoco, Venez; Mr67 Yana, Sib; Je53 Jefferson & Madison rs, Mont; D76 Flat crk, Wyo; O74 White r, SD fm Skylab; Ag71 Verdigris, Okla; Ag32av Forth r, Scot; O55 Meuse r, Belg; F35(f) Saar; lg loop (av); Ap32av Rhine at Rheinau; Mr42 Gambia r, Afr; S63 King r, Austl; all meanderg rivs & oxbows

S72 Conn r, Mass; O72 & N70 Amaz; Mr73 Zaire; F73 Adelaide r, Austl; all floodplains & braidg rivs; Je75 braided r, glacier-fed, Austl

EROSION, CANYONS, &c. *(See also main subhd EROSION)* Jl26 erosn by US rivs E & W; F77 e of Ohio r shores; Mr54c canyons, Ut-Colo; Mr37c (pns) Yosemite Vall formd; My69(fdt, pns) Colo r, geol hist; O74 Color r w canyons & dams fm Skylab; F70(f) & Jl36(f) Salmon r & Mr77 Snake r betw rugged hills, Id; O70 Red Deer r gorge, Alta; O74 Salween r, Burma, slicg thru steep gorges, fm Skylab; N40 Salween trip

MISC. D74 Columbia r harnessed for power (see also INDUS POWER); Ag65(rift in earth's crust) & D44 Jordan r, Isr; Ja76 Owens r, Cal, canals takg water for L A; Je75(fdt) Alas pipeline along Koyukuk r; Mr59 St Lawrence Seaway; Ja55 Fla swamp rs

Salt Lakes. *See LAKES, SALT.*

Savannas. *See subh of CLIMATES.*

Shores. *See COASTS.*

Snow & Ice. *(See also subh ATMOSPHERE; GLACIERS; MOUNTAINS and main entries ARCTIC & ANTARCTIC)* Ja70 & Ja23 snowflakes, frost & dew microphotos; N49(f) Ore snow survey; Mr76(f; microphot) frost; Ap72 record brkg hailstone; N49 9" hailstones, Kan; Jl31 golfball hailstones, Yucatan; Mr53 Pyrenees ice caves; N76 ice-cores trace climatic hist of earth; D77 causes of Blizzard of '77; satell phots of Sierra Nev range; effect on E in Bflo, Pa, Chesa Bay &c

Straits. Ag51c Bosporus; D77 s E of Inland Sea, Jap

Stratosphere. *See subh of ATMOSPHERE above.*

Subarctic (Taiga) *See subh CLIMATES: TAIGA.*

Taiga. *See subh of CLIMATES above.*

Tropical Rain Forest. *See subh of CLIMATES.*

Tundra. *See subh of CLIMATES.*

Veldt. *See subh SAVANNAS of CLIMATES.*

Volcanoes. *(See also above subhds EARTH'S CRUST & ISLANDS & main hdg ASTRONOMY for Mars & Moon.)* Ja73(f;maps, pns) lcoat of vs along rifts in earth's crust; creatn of volcis!; freat faults; O67 Ind Ocn v rift in earth's crust; N79 volc lava lakes & pillars at vents in sea floor

BIRTH OF VOLCANOES & VOLCANIC ISLANDS.

F44 & Ag68 birth & growth of Paricutin(on land), mex; My65(6pn) birth of Surtsey isl off Icel; My77 new cone Eldfell added on Heimaey isl off Icel; Je58 birth of Ilha Nova, Azores v isl; Ja54 "jack-in-box" Myojin, v isl off Jap rises & falls in sea; My68 same at Tonga off N Z; Falcon isl v

REGIONAL ARRANGEMENT

Western Hemishphere. Jl62(3pn) & Mr37c(pns) Crater Lake geol; D46c same, wint; O60 extinct v in Id; My66 Lassen v, Cal; quiesc & in erup; Ja70 Ubehebe crater, Death Vall; F76 crater lakes, Ariz; Ap66 Devil's Tower, Wyo, cent core of extinct v w surr cone eroded(neck or plug); O48 Aleutians; S31 Aniakchak v; Je63(pns), S21c & F18 Mt Katmai & Vall of 10,000 Smokes, Alas; Je56c erup of Trident v, Alas, fm abv (For Hawaii see subhd PACIFIC below)

S19 v & quakes in Cent AM capitals; Ag44c Nicaragua; O36 vs of Guat; N76 Fuego v in erup, Guat; N74 & O36 Santa Maria, Guat, perf cone; N44c Izalco in var stages of erup, Salvador; Mr30 extinct v crat in Managua (fort on rim) & My32 Momotombo & reserv in sunken v, Nic; Jl65(fdt) Irazu in erup & effects, Costa Rica; O46c others, C Rica; F44 birth & growth of Paricutin, Mex; O52(2p) same in erup; S40c & D51c Popocatepetl, Mex; Ag69 huge stone spheres formd of fiery v ash, Mex; D65 v on St Lucia, W Ind & St Pierre, Martinique, today & in 1902 when it killd 30M in 3 min; Ja41(av) Pelée, Mart; N40 Saba; Ja70 Sint Eustatius, D.W.I; Ja73 crater of Mt Soufriere, St Vincent; S79 same, rain of ash

Ja50 & Ja29c2 El Sanguay & Ecuador; F68 el Altar, collapsd v; Cotacachi on "Ave of Vs," Ecuador; Ja33 Mt Ubinas & el Misti, Peru; Ja33(avs) el Misti & Ubinas & crats; Ja34 Vall of Vs, Peru

Atlantic Region. My62 Tristan da Cunha's last erup & Ja64 final result; My75 lava flowg fm fissure on ocn floor, Mid-Atl Ridge; Ag76 same "pillow lava," Carib Sea; Je58 birth of Ilha Nova, Azores v isl; F46 Pico, Azores; My65(6pn) birth of Surtsey v isl off Icel; Jl73 destr by Kirkjufell (& see abv subhd ISLANDS); Ag69 v boilg springs, geysers, Icel

Europe. N61(4pn) Vesuvius & death throes of Pompeii; Mr76 crater of Etna, Sic, fm air; F43 same, active, wint; F46(av) Etna & Vesuv in erup; Jl44 Ves worst erup in 72 yrs; Ja55 Etna, Stromboli; Jl51c castle blt on volc plug, Fr; My72(2fdt pns; maps) volc cataclysm 1520 BC on isl of Thera destr Minoan civiliz, Crete

Asian Mainland. D39 Cappadocia cone dwellgs, eroded lava fm anc volc, Turk

Pacific Region. Ap24 Sakurajima, Jap's worst erup; Ja54 "jack-in-box" Myojin, v isl off Jap; Mr33 Asama in erup & Fuji crat, Jap; My61 Bromo & Krakatau, Indon; Ag62 crater lakes, Flores, Indon; F46 Batok & Tengger, Java; S63(f) ash & mud destr Bali vill; N69 more on Gunung Agung; S66 & S30 Taal v(isl, many craters) fm abv, & Mr45(Mayon v), Phillip; My62 Mt Lamington, Papua, smoldrg after 11 yrs; S71 Yasur v in erup, & My75 view of its throat, New Heb; Ja45c Mt Bagana in erup, Bougainville; Je42 isl v, Rabaul, N Brit; Ap52c Ngauruhoe, NZ; Ag25 Waimangu, N Z; F36 White isl, N Z; Mr68 v isl Falcon off Tonga near N Z rises & falls in sea; Ja62 crater lake, Easter isl; D52 isl v born off Mex in erup (San Benedicto isl)

Mr60, Je59, O55, O38 & F24c Hawaiian vs; Mr75 Mauna Ulu, vent of Kilauea, eruptg & Ap71 Haleakala crater, Hawaii; N49c(av) Diamond Hd, dead center

Africa. Ap32 Kibo v & crater, Tanzania (Kilimanjaro grp); Ap75(crater, 2p) & O39 Kilimanjaro; Mr52 lava plain, Zaire; O39(f) Nyamlagira; Je42 crater lake, Madag

Water. Ag52 fresh water; N49(f) snow precip measurmt, Ore; D56c same, Yell Pk *(see also subh RAIN)*

Waterfalls. Jl26 & S20 duot, world's greatest w; Ag55 (2p) Alexandra f, Dist of Mack, Can; Je47 Sunwapta r f, Athabasca & Takakkaw; Je49 Grand F, Lab; Jl66(fdt) Je54c & Ap51c & Je40 Yosemite & Bridalveil f; My72 Lower F, Yellowstone; Mr70 & My48c Havasu, Gr Canyon, Utah; Ag71 Turner F, Okla; Jl26 Cumberland f, Ky; Ja69 & D46 Multnomah f 620 ft drop, Ore; Mr35 Minnehaha, Mn; Mr75 Akaka f, Hawaii; Jl51c Grand F, Labr; N75 la Grande Anse, Guadeloupe; N49c(f), Mr63 (fdt) & Ag76 Angel f, Venez; O40c Bogota f, Colomb; Mr75(2p), S62(2p), Mr58, Ja67 Iguacu f nat pks, Braz-Arg; F64 Seljalandsfoss, Icel; Jl71 Sivlefossen(Norway); Ap67 Rhine f, Schaffhausen; Jl69 & Ag50c Staubbach f, Lauterbrunnen, Switz; D74 & Mr56 Gavarnie f, Pyrenees; My75 & N62 & S44c(av) Victoria f, Afr; Ap65 Blue Nile, Ethiop; D69 Duden r f, Turkish coast; Ag53c & Ap31 Howick f, Natal; S61 Duque de Braganza F, Angola; O67 LaChute de la Lily, Madag; F73 Jim Jim f, Austl; Ja72 & Ap62 Sutherland f, N Z;

Weather. *See above subh ATMOSPHERE.*

Wind. *(See also above subh ATMOSPHERE)* N79 & Ag52 w-blown desert dunes inundate towns, crops

PLANTS (FLOWERS; PLANTS; TREES) *(See also AGRIC:CROPS and BIOLOGY)*

Flowers. *(See also INDUS: FLOWERS)*

Collective. My27c(2pn) family tree of f; S58b irradiated flowers; preserv by sand-drying; My68(fdt pn of 117 f) f seed growers of Amer; f anatomy; Jl47c(24pn) cultiv f of world(Bostelmann); Mr48c(8pn) patent hybrid f & fruits; Ag72(f;pn) creatn of new rose; Jl25c(55pn), Je24c(47pn), Je17c(24pn state fs), Je16c(16pn), My15c (25pn), Jl22c(16pn), all Amer wildfs by Easton; My53c Am wildf odyssey; Je21c(8pn) flowering grasses; Jl51c Longwood, Pa conservat; My56 & Ap41c(f) Sherwood gardens, Balt; Mr53c Magnolia & Cypress gardens, S C; Ag37 Gage pk, Topeka; Jl37 Mitchell pk, Milw; Ap50c Kew gar, Lond; My63 Exotic gar, Monaco; My54c espaliered fruit & f gar, Scotland; Mr74(f; phot Zahl) algae

Flowers, Regional. My27c(31pn by Clements) 206 wildf of west; Ag39c2(125pn) mid-west wildf; Ap42c Mr36c, N34c & Je54c Calif wildf; Ja70 wildf of Death Vall; S73 Mex gold poppies, Sonoran Desert, S Cal; des hyacinth(ajo), saguaro cact; organ-pipe cact; jumpg cholla(teddy bear); Jl55 Olympic nat pk wildf; My63 Mt Rainier wildf; F24c Hawaiian plants; Ja67 Haw leis of many f; Ap57 Gr'land pl; Ja53c Key West gardens; O60 wildf of Craters of Moon, Id; Ap68(Zahl phot) wildfs & blossmg trees of W Md; D64(4pn) Isr wildf; My64 Malaysia flytraps, pitcher pl, bamboo water supply; D76(Zahl micro & enl phot) wild gardens of SW Austl; Mr62 Congo exotic lichens, groundsel f, lobelia, papy-

rus, Mr72(f) & D79 plants of Alas tundra; N71 lichens, Antarc

Flowers, Special. My78(f,pn) & S33c2 Holland tulip indus; D46c tulips, glads, Or; Ap71(feat, fdt, pns) orchids; My47c azaleas; My59 Concord iris gard; My39 same, Tn; Je65 sundew, carniv pl, Del; O76 water hyancinths & hydrilla, Fla; Je57(Tenn) Ag41c(NC), F33c (Wash, wild) & My54c(Scot) & Jl31c(China) rhododendrons; My51c & O52c mt laurel, alpine azalea, bog laurel; My47c(Va) & Ja44(Ala) azalea; Je34c wild azaleas, rhodos, laurel, NC; Je65 field of charlock, Wales; Mr68(Scot), Jl65(Aran isl) heather; Jl65 C Rica wild orchids, giant cardon cactus; Ja68 poinsettias, Virg isl; D66 Dutchman's pipe w gnat victim; Ja74 carniv thread-leaved sundew traps a bug; Mr75(f, pn, phot Zahl) insect & anim life in waterfilld plant, bromeliad; Ap36c lotus pond, Jap; My78(f,pn) & My61 f that eat insects (fly-traps &c); Je61 roses & their aphids; Ag72 (f,pn) creatn of new rose; Ap44 roses climbg on hse, Nantucket; F56 century pl, Vt; Mr36c wisteria, lupines; Cal; D31c wisteria, azaleas, Ala

Plants, Edible & Useful. *(See also AGRICULTURE: CROPS, INDUS:FOOD, RUBBER, & TOBACCO & subh below, TREES)* S51c (24pn) Am fruits; Ag49c (32pn) Am veget; F19c(10pn Eaton) Am berries; Je16 wild blueberry; My16 pre-Inca potat, tomat & coca; D74 Polynesian fruits & veg, tradit staples; D34 Carib useful p(air &c); S25c, Ap37-2(f) & D45c(f) & Mr63 saguaro; S25c var cacti; My46 Sao Tome chocolate; Ap71 & Je42 vanilla pods, Madag; N44c coffee, El Salv; D67 & Mr54c breadfruit, Jamaica; F66 coca, source of cocaine, Boliv; F41c2 cotton; My25c2(16pn) ferns; S66 pandakaki leaf, jungle iodine, Philipp; O50c & F66 puya cactus tree (Andean pineapple); S74(12pn) medicinal herbs: cola, curare, ipecac, rauwolfia &c; Mr46(f, Ecua) quinine; F46 & Ja42 same, Java; N44 & O46 quinine fm Philippines rescued to Costa Rica in WWII; Jl77 & Ja68 opium farm, Turkey; Ja77 same, Pakistan; F72 opium poppy, Thai; Ja74 opium poppies & smokg, Laos; Ag79 & Ag17 khat leaves, Arab stimulant; Je77 peyote(hallucin) harv & eatg, Mex Inds; N75 early engravs of Cuban Inds smokg tobacco & sniffg narcotic yopo

N79 gopher p's latex made into crude oil & gasoline; jojoba p gives superlubricant; F40c2 & F48(Liberia) rubber *(see INDUS:RUBBER)*; O54 seaweed; My71 (Jersey), Ap65 seaweed for fertil or gelatin, Brittany; My72 edible seaweed, Jap; Ag72(f) giant kelp, Baja Cal; Ap78(av) 3 mi kelp bed, Cal; Ja42 unloadg & choppg kelp, Cal; Je31 k harv & burnd, Aran isl; Mr54c sisal, Jamaica; F68 bagging kapok(fm pods of ceibo tree) Ecua; Mr54 spices; S56 French truffl; Ag18 acorn; Ap71 & F24 silver sword p & ape-ape foliage, Hawaii; N71 marijuana yields veget oil & fibers for rope, Nepal; My64 bamboo water supply, Malaysia; Ja23 & Ag24 cork; My30 abaca(manila hemp) dryg, Phil; Ap30 Sp moss, La; S45 rattan, Borneo; Ja45 same stackd for export, Celebes; Mr62, Ja55 & S43 papyrus; Je72 cordgrass fm mud flats used as mulch, discharges excess salt; Jl72(f, desert isl) & Ag73(f, US SW) survival on wild herbs &c

Trees. *(See also CONSERVATION: INDUS:LUMBER)* **COLLECTIVE**: S56 natl forests; Ja77 forestry techniques, Wash; N55(16pn) northern state trees; O57(16 pn) so state t; Ap74(f, pic map) leadg timber trees of N Am; Ag22 fight at timberline; S53 t-ring dating

TREES, SPECIAL. Ja76 & Mr58 bristlcone pine, oldest living thing; F40c2 & F48c(Liberia) rubber; Jl64(doub fdt) world's tallest t; My51c, Ag59c, My & Jl66, Je54c, F39c, Ag34, & Je20 Cal sequoia & redwood; O78 giant western red cedar, Can; S56 Forest Serv nursery weedg seedlgs; F70 & D46 Lebanon cedar; F33(Wash), Mr32 (Mor) same; Ap45 yew gard plantd 1650, Eng; N55 & Ja50c rhodod trees, Nepal; N68 & N60 cypress, Lower Miss; My77(f, pns) mangrove swamp life, Fla; D51c Mex ahuehuetes(giant cypresses), Mr66 Sp moss on trees, La; Ag76 pond-apple tree w Span moss & orchids; Mr22 chaulmoogra t(leprosy cure); Mr18 frankincense, Socotra isl; O60 wild fig; F24c flame t, koat & t fern, Hawaii; S63 baobab t, Austl; Mr42 baobab, t of all uses, Dakar; Je35(77' circum, Rho) & Ja34 same; Je42 Ravenala t, for water & furnit, Madag; O67 thorn-studded Didierea baobab t, microcephalic baobab & pachypodium(canteen of desert) Madag; Je71, My49c, Ja23 & Ag24 cork; O67 & O64 banyan t; Je66 aerial roots of giant banyan, New Brit; O36 ceiba(kapok) w 180' spread, Guat; S63 karri of SW Austl rivals redwd; N77 reforest of pine & Gmelina, Braz jung; N50c var palms, Fairchild Trop Gard, Miami; S37 flamboyant t, coconut palm, cacao, Trin; D34 Carib porcupine t, coconut palm, coco-demer palm, bread-fruit; Ja70 date palms, Death Vall, Je35c same, Mor; O72 cirio(boojum) t, Baja Cal; Je71 almond t, Morocco; O62 coconut palm Samoa; Jl35 coconut, pandanus, Austl; F42 coconut oil, Philipp; Ap51 jaguey ts, P Rico; Ap54 umbrella pines, It; Ap55 (3000 yrs old) & My30 dragon t, Canaries; Ag66 samba t, Iv Coast; D49c aspens, cottonwds, NM

Ag36 giant tulip t, mt laurel, NC; S37 wisteria, lg liana, Miss

POLAND. Ap72(mod & hist maps) city life, mts, customs, indus &c; S58 reconstr, rural customs & costumes; Je39 & Ag26(49fl) both excell; Mr33c2; Ap32c; Mr35c S P peasants & costumes; N & O39 Danzig; Je38-2 duot, pt; Ja15 partitioned P

POLLUTION. *(See also CONSERVATION: ECOLOGY)* D70(fdt, pn) ecological crisis: effects of stripming, killer fogs, DDT, indus p of air & water; Ap79 (diagrs) danger of nucl contam

Water. Ja72(pic map, diagrs) imperild Ev'glades: invasn of salt wat, drain of fresh wat, oxyg starv of fish; forest fires; Ag76(f) effects of subdivs of Big Cypress Swamp, Fla; scalpd by tree choppers, wat table lowerd; O77 collapse of soil fm failg wat table, Ariz; N76 satell view of p & eff on climate, Lake Mich; O73 p waters of lower Color r; N71 stream p, Ky; Jl70 Glens Falls papermakg chem waste into Hudson; Ja78(f) Hud r improvg; O76 sulf acid-soaked creekbeds, Potomac area; offshore oil well on fire, La; Jl78(f) Amoco Cadiz spill, Brittany; devast & cleanup; N72(map, drg) Venice sea lev risg; fall of fresh wat; air p

Air. N76(f) testg atmosph p over St Louis; Ap72 (Pol), Mr65 & Jl49(Pittsb) indus air p; O64(Tokyo harb), Mr72(Vancouver isl) smog; O75 air p abatement, Birmingham, Ala; F77 air p at power pl, Madison, Ind; Je73 p fm coal-fueld power pl to be treated by TVA, Penn;

D74 p fm nickel smelter in New Caled

Land. My & Jl76 stripmng operns, Mont; Ag75 stripmgn damage, Wyo & Tenn; Je73 same & attemps at replantg(drgs), Tenn; Jl76 lge acreage needed for wat coolg nucl pl, Fla; unfin cloverleafs & huge areas of concrete ring cities

Wildlife. Jl78(f) effects on w of Amoco Cadiz spill; O72(f) mercury & its pois eff on wat, fish, treatmt &c; Mr74 merc pois therapy, Jap; D77 eff on sardine fishg, Jap; Je71 attempts to cleanse San Fran Bay of oil slick & rescue birds; Ja75 eff of p on brown pelican; Jl74 oil-soakd duck fm tanker spill, Me; Jl70 scum-coated ducklgs, Champlain Canal; Ja72 oxyg starv of fish, Fla, & forests burnd off by fallg wat table; Ap48c pl life killd by copp mine fumes, Tn; Jl76 destr of desert ecol by motorcycle racg; Je79 cattle feild by chem mixd w feed, Mich

PORTUGAL. O65 cities & coasts; N60 incl Oporto & Prince Henry the Navigator; N48c, F38c2, N27c2, N54c coast; Ag41 & N22c Lisbon

PUERTO RICO. *See WEST INDIES*

PYGMIES. *For Afr tribes see countries & also ANTHROPOLOGY and ETHNOLOGY*

QUEMOY. *See China. (TAIWAN listed sep.)*

RECREATION. *See SPORTS &c.*

REDFORD, ROBERT. N76(f, contemp phot) revisitg old wild west & its badmen

RELIGIOUS CEREMONIES *(See also FESTIVALS &c)*

Christian. Ap51c Holy Wk, Seville; D69(fdt) 100 priests serve mass for pilgrims, Chartres cathed; D64 pilgrims & Pope in Jerus; D54c pilgs at Nativity site, Beth; O50c & D67 Rom Cath & Grk Orth ch rituals at Ch of Holy Sepul, Jerus; pilgs bearing cross, Via Dolorosa; Ap72 pilgrimage to Czestochowa w cardinal; My71 Russ Orth priest, Leningrad; D58 & S16 Grk Orth ch, Mt Athos; Jl63 its clergy, Athens & F70 Beirut; Je78 Armenian Apost Ch patriarch; D50 Gk Orth Armen cerem of Washg of Feet, Holy Wk, Jeru; Je62 same, Bulgaria; Mr66 candle lighting, Mosc; Ja64(f; fdt) & Ja76 St Cath monast, Mt Sinai; Gr Orth monast blt on cliff, Jericho; Mr53c Eastern ch serv, Dodecanese; S60 Addis Ababa Coptic Chris Ch; Ap75 & Ap64 Mormon Ch; Je77(Me) & Ag70(Mass) Shakers; D70 Moravian sect, Old Salem, N C; My79(f) rel settlemts in Sask; Doukhobors, Waldeck Hutterites, Mennonites; Jl70 Hutterites, Mont; D75(f) Amana colonies, Iowa; N68 immersn in riv by Baptist Ch, Miss; My43c(Ark) & D31 (Ala) same; O74 same, Assem of God, Tex woods; N74 mass baptism at revival mtg, James r, Va; N70 tent revival mtg, Mo

Judaist. Ja76 & Mr65 Isr home observances; D67 Jews flock to Wailing Wall, Jerus after war; D38 Isr priest blowg shofar; Ja76 pilgr to W Bank; Ja20 Samaritan Passover sacrifice; D68 Passover toast, Israel kibbutz; Ag75 Hasidic Jews of Brooklyn (See also ISRAEL and pns of anc Isr)

Islamic (Mohammedan). Jl72(12th c map of Arab world) Isl conquests, achievemts, art, culture, relig of Arab world; Jl53c Mecca; Ja66(fdt) 1/4 million at Mecca mosque; N37 duot & Je34 pilg to Mecca; O75 Moslem faithful at prayer in auto showrm, S Arabia; F73 crowd in mosque courtyd fm air; legal use of Koran, Oman; N78(f) pilg to Mecca; prayg(av), stoning of Satan, anim sacrif; Ap74 Moslem pilgrims at Damasc tomb; oth Islamic rites; Ja67 muezzin calling to prayer, Chittagong mosque; Mr64 worship at Yemen mosque; N58 Moslems worshippg, Kashmir & Shia M's flailg selves w knives; O72 Sikh relig: prayg at Golden Temp, Amritsar; Ja75(shrine of Imam Reza) & Ja61 Iran; My61 wedding, Sumatra; F70 M funeral procession; Mr47c weighing Aga Khan

Buddhist. Mr51c caves of 1000 Buddhas; D36c2 & F50 Chinese New Yr, Peiping & Kunming; Ap69 joss sticks lighted at shrine, Macao; N64 B statues in cave temples, Yun Kang; S67 Daibutsu or Gt Buddha at Kamakura, Jap; Mr70 53 ft B of Gt Illuminatn, Jap; Mr46 cerem on Puto isl; Jl67 & D59 temple, cerem & solid gold B in Thailand; S68 175 ft statue of B, Afg; N70 B royal funeral, Sikkim; F63 reclining B of Pegu & Burmese pagodas & marble page of B scripture; Je74 relig trng of boys in Burma, gilded sacred statues on barges; Ap60 12-14th cent B rites, Cambodia; S52c golden B in Royal temp, Phnom Penh, cap of Cambodia; O64 mod Cambodia; Mr60 Nepal B cerem; Ja60 Laos; Je61 B monks, rituals, weddings, Thailand; Mr69 B mt grotto, Korea; S75 Confuc cerem, S Kor; D68 pray for peace, Viet; Ja71 B monks prayg at Borobudur, Java; Ja69 candles lit, Taiwan; Je50c prayer at Korea shrine; D60 Jap Zen B abstract garden, fire-walking, Shinto rites

Lamaist. Ag46-2 lama-land, Tibet; Jl31c & N24 devil dancers, China & Tibet; N28c2 Choni lamasery, dances & gods; O65 rites, Mustang(Nepal); O66 lamas enact Buddh scriptural stories, Nepal; F50 mts of Tibet; O35 c2 Tibet, oracles & demons; "sungmas"; D52c lamaist sacred dances, Bhutan; Mr51 Dalai Lama, Lhasa; My38 Panchen Lama in plane

Hindu. O60 Ganges cerem, Holi festival, wedding, fakirs; O71 H rituals in life of India, celeb of solar New Yr, Hardwar; Ap66 Ceylon dance, selftorture of relig fanatics; Ap31 fakirs walkg pincush w hooks in flesh; My77 H endures lances & hooks, Malaysia; S70 H worship of cobra, Ind; Ag66 H wedding, Singap, self-tormenting; Ap31 fire-walking; Jl45 Ind women w wire thru cheeks in penance; Mr60 fest; O56 pilgrimage to cave in Kashmir; Ap60 rites in Indochina; N69 Bali food offering march & funeral pyre; anc drama of Ramayana; S63 in Bali

Shinto. D60; S67 S priest in cerem dance; Je76 S New Yr celeb, Kyoto, Jap; F67 S rites, Ainu people, Jap

Zoroastrian. Ja61 Iran

Other. D75 fire-walkg at Chamula, Mex, mixt of Christn & Maya beliefs; food offerg to rain gods; D59 Balinese funeral; Jl66 sacrifice of water bflo, Thailand; My77 headhunters & worshipers, Sea Dayaks, Malaysia; Ag66 witch doctors, Iv Coast; Mr69 Dama cerem of Dogons, Mali; Mr71 & O61 Caodaism, Viet; Ap68 "witch dr" rites prayg to rice god, Viet; Je60(4pn) Stone Age Britain; My77(pn) anc Druids ritually slay old king; D66 pagan rites, Ur; Ag74 human sacrif to Baal, Carthage; My66(pns; fdts) anc Egyp rites at Abu

Simbel temples; N46(pns) anc Rom worsh of Isis & Bacchus

REPTILES & AMPHIBIANS. N54c rept & amph kept in Zahl city apt

Reptiles

SNAKES. S54c(15pn) Am snakes; N79 & Je54 sidewinder (hornd rattler); My57 western diamond-back rattler; Ap68 black rat snake; Md; Ag76 & My77 rat snake; Fla; S79 water sn; La; N71 copperhead sn; O74 ribbon sn swallows tree frog; Tex; N75(f) Manitoba's huge pits of garter snakes

Ap53c & Ap69 N Guin pythons; S69 pythons & boas; Dublin zoo; N38 boa in tree; Braz; Ja39 water boa swallowg 6 allig; python; Jl77 rat devourd by python; India; Je53c pyth w childr in Lon zoo; F75(2p) giant anaconda of Amaz capt by 7 youths; O72 20' anac w child on back; Peru; Ja39 22' anac; Venez; S76(clo) ghorapachar sn killd by mongoose; Ind

S70 & My63 cobra & Ind sn charmer; F53c sn charmer, Singap; N30 s venom farm; Braz; F69 extractg venom fm mamba sn; Kenya; N50c Haast Serpentarium, Miami; cobras; Ap72(f) divg w sea sn; Austl; Ap67 sn devours young iguana

TURTLES. My52(8pn) turtles; N72(f) life cycle of Galapagos giant tortoise: matg, birth, conserv meas; Je67 Carib green turt, life cycle; N59 green turts & torts; Ind Ocn; Ja30 & Ja22(pn) green turts; Fla; Mr24 turts; Austl; O67 tort; Madag; Ap67-4c tort; Galapagos; O73(f) Pacif ridley(sea) turts; egg layg on beach; Costa Rica; Ag43 giant turts of Carib; My57 box turts

CROCODILES & ALLIGATORS. Ja78(f;compos pn of 20 vars) crocodiles; My70; Jl66 & D63 Fla allig; O77 Amer croc; Domin Rep; Ja67(f) allig & croc compared; swallowg rattler; alligs of US; Ja49(pns) allig & croc; Fl; N38c2 Amaz delta caymans, lizards, boas; S62(Braz), Ag76 (Venez) & Je57b(Br Guiana) caymans; S76 mugger croc; India; S71 & Mr50 Afr croc; F72-3c croc attacks baby hippo; S30 Johnston croc & baby; Austl

LIZARDS. Ap37 Gila monst; O67 tree liz; Madag; N38 same & allig lizard; Braz; S70 earless liz; Je54 spiny & fringe-toed liz; S78(fdt) & Ap67 marine (fdt) & land iguanas; lava liz; Galap; Ja72(Belize) & N38(Braz) iguana(both clo); O76 Colombian green ig; S71 monitor, 6' water liz; N38 allig liz; F73 frilld liz; Austl; O44 same w monitor liz or goanna; Austl; D36 bearded liz; Austl; F66 & Ja46 perentie liz; Austl; My34 fence liz; Ga; Ja70 & My67 banded gecko; Mr68 same, prey of scorpion; D68(f), Ag27(duot) & S36 Komodo dragon liz; N54c reptiles kept in Zahl apt: liz, chameleon (anole), pond turts, baby caymans, iguanas &c

TUATARA REPTILE. Ap52 & My35

Amphibia

FROGS & TOADS. My32c2(14pn) frogs & toads; Ap50c frogs & My38 smoky jungle fr(eats bats & snakes); Jl73 (f; Zahl phot) tree frs of Costa Rica, esp dendrobatidae, many var, life cycle, used in med experim; My34 LeConte's chorus f; Ga; southern t; O76 Cuban tree fr; Mr75 tree fr w eggs on back; F73 green & dwarf tree fr; Austl; Jl67(f) largest fr, Conraua goliath, Afr; Je63 bullfr phot in leap; My66 poison fr kokoa, Colom; Mr70 golden fr; F71 fr-long fr, Lake Titicaca; O76 giant toad fm S Amer; N79 S Am t; N54c(amph kept in Zahl apt) salamander, "hornd" toad, tree fr,US(clo)

OTHER AMPHIBIA. Jl72(f; Zahl phot) many var of salamanders; S36 salam or water puppy, Indiana

RHODES. *See GREECE*

RHODESIA. *See ZIMBABWE*

ROCKETS. &c. *See SPACE FLIGHT.*

ROMANIA. N75; Je69(hike-oriented); Ap34c3(2c), N38; Jl65 Bucharest mod apts & Danube scenes, pt R; O15; S16; Mr40 caviar; Mr26 Transylvania 7 castles

ROME, ANCIENT. *See ITALY.*

ROOSEVELT, THEODORE. O58b biog

RUSSIA (U.S.S.R.) *(Former Baltic States listed sep, e.g. Latvia)* S59; D59; Ja78(pic map) & Mr66 Moscow; My71(pic map) Leningrad; Ag77 travels of a photojournalist acr R & Sib; Mr67 & D44c Siberia; F76(f) Ob riv, Mongolia-Arctic; Novosibirsk; N26 (81 il); N43; My43 wartime indus, Magnitogorsk; Jl42 Caucasus & D18 same & Georgia & Turkestan; Ja73 centenarians of Georgia; My73(f), D42 & Mr18 Volga; My44 & Ag18 Ukraine; Je79(f) Sov farmg, Crimea(Ukraine); Je52 Tur-Russ border; Ap45 Crimea; D39 Estonia; Je32 Khoresm (Uzbek SSR); N54c Kazakhs migrate; Mr62 & My21-2 Mongols; Je33c2(Gobi desert archaeol) & N32c3(2c) pt, Mongolia

History (Revolution) Mr17-2 genl views of R's "democrats"; Ap17 part in WWI; Jl17 Kerensky, man of the hour; Ag17 aftermath of war & revol; Mr18 Volga amid war & rev; N18 churches in rev, "rebirth of relig"; D20 Bolshevism comes to Siberia; My21(by Bryce) speculations on future of Siberia

ST. HELENA. Ag50; O78(2p pn) sunken treas; Jl39 & Jl27 pt

SALVADOR. N44c; F22 incl volcanoes

SAN BLAS. F41c2 Indians (off Panama)

SAN MARINO. Ag67; Ag18

SAO TOME & PRINCIPE. *(Indep. 1975)* My46

SARAWAK. *See MALAYSIA and PAC ISL: BORNEO*

SARDINIA. *See ITALY.*

SAUDI ARABIA. Ja66(fdt); Ap48c2, S42-2, O45; Ja60 pt, oil, ships; N78(fdt,pic map) pilg to Mecca; map of Muslim world; Jl53c, N37 duot, Je34 & Ag17(Hejaz) Mecca; Ag65 Bedouin chief's camp, flocks of sheep, coffee urns & transistor radio; O32 Hadhramaut; Mr64, F52c, N47c2 & Ag17 Yemen (kingdom); Jl56 Oman desert sheikdoms; F46c Bahrein, pearls & petroleum; N37 pearls; N48 sailors; D52c Kuwait; F57 & D35 Aden

SCIENCE. *(Chiefly Physics; for other sciences see fields of application, such as Astronomy, Aviation, Biology, Botany, Industry (esp Chemistry, Communication, Power), Medicine, Photography, Physical Geography (esp Atmosphere, Oceanography), Space Flight, and Technology, Historical)*

O45 "new world of tomorrow": aerosol bomb, jet aircr, TV b'cast, cyclotron, radar, plastic coatgs, elec eye beam, freezer comptmts, short wave radio for enginrs, DDT &c; D45c(16pn) "sci wks for mankind;" advances in technol

N48(f) electricity; S58 atomic physics; Ja54 atomic energy; Je53 Nev atom pls; My62(drgs) nucl power pl under Gr'land ice-cap; Ap47c & Jl46 Bikini explosns

N70 computer revolutn; Ap74 electronic scanng of logs to plot saw cuts; Ag62(pn) radar screen on nucl ship

O79(diagrs,mphos,models) fiber optics w lasers; medic & communic apps; phoning on light beam; D66 laser & My66 holography; laser-prod 3D pix

Je67 anechoic (sound-absorb) chamber, S III U; Jl54c same, Bell lab; Ap61 photo-acoustic study of bat's flight; Je73 noise resrch

Jl65 effects of radioactivity on pls stud in C Rica; Ag58 radiocarbon & O61 potassium-argon tests of age

Ap68 appr to absolute zero, Delft Tech U

Ag68(f, many diagrs) use of crystals in indus technol, chfly communications

SCOTLAND. Jl56; Mr68 & My46c Highlands; Ap61 lochs, coasts & Skye(Villiers); Ag50c woman hikes Edin-Lon, pt S; Ag35c clans; O57 lit & hist shrines; Ag76(f) & Ag32 Edinburgh; Ap36 Dundee; Je77 Loch Ness & its legend; Je43 wartime; Jl52c Skye; O54c & F47(folksongs), Hebrides; N74 Inner Hebrides; My70 Outer Hebrides; Ap77 drillg for oil in N Sea; refinery; Jl65 Arran isl; My54c rhododendrons

SCULPTURE. *See ART subh*

SENEGAL. Ag66 Dakar

SERBIA. Ap15 *(See also YUGOSLAVIA)*

SERVICES. *See subh of INDUSTRY*

SEYCHELLES ISL. N59 esp wildlife

SHELLS. Jl49c shells of world; Mr69(pns, Zahl phot) bivalves, conches, cowries &c fm East Coast, Pacif, Medit, Austl, undersea & in museums; Ap62 & Je40 mother-of-pearl; Mr55 x-rays of s; Mr65(52 in col, Everglades) & F24c tree snail s; D67 giant conch & helmet s on sale, Jam

SHETLAND & ORKNEY ISL. O53; F21; D54 Viking fest

SHIPPING. *See subh of INDUSTRY and note under SHIPS below*

SHIPS. *(See also EXPLORERS; HISTORY; INDUSTRY: FISHING & SHIPBUILDING & SHIPPING; PHYSICAL GEOGRAPHY: OCEANOGRAPHY; SPORTS: WATER SPORTS; UNDERWATER SALVAGE; TRANSPORTATION; U.S. ARMED FORCES; VOYAGES)*

Historical. Ap63(pns, many old prnts &c) ships thru ages (Villiers); Ja38-2(16 etch) ships thru hist

My60(2pn) Bronze Age s salvaged; O41(pns) Egyp s; Mr77 world's oldest known s reassembled fm Egyp tomb of Cheops pyram after 4M yrs; F78(fdt pn & wall pns) Mycenaean galleys; Ja68(pns) battleships of Alexander; Ja54c anc Grk s salvaged; Je70(2pn) bldg Grk mchtman 4th c BC; N74(pn) & Ag74 more on same, oldest s ever raised & restored; S68 1400 yr old s & its galley reconstr; F69 Roman cargo s of 2-300 AD as salvaged

D77(pn, map) St Brendan's 550 AD 36' open leath covered sailg s reconstr & saild Ire-Icel-Newf by Severin; Ap70(4pn, fdt map) D62, N64(pns) & Ag66(pn) Viking & Norman ss; Jl71(drg) Norse s 1000 BC - present; F41 Sutton Hoo Vik s burial mound (600 AD); D69(pn) Turk fleet hauled overland to capture Constantinople, 1453; Je76(pns) Magellan's ss; Ja62(pn) 16th c Swed warship Vasa; D77(f; pns, old prnts, map/pic supp) & F66(pn) 16th c Span galleons; Je76(2pn) Sp galleon loadg cargo in Havana 1622; F75 (pns) Drake's Golden Hind & Sp Armada battle; Ja67 Sp treas galleons of abt 1700 salv off Fla coast; N57 & My57 Mayflower II (Villiers); Ap62 reconstr Bounty; S71(fdt pn) Capt Cook's Endeavour; Ag63 & Ap52c & Je48c Nelson's flagship Victory in dock; Jl53(f) & F51(pn) Perry's fleet opens Jap, 1853; N60 Union gunboats on Miss; F51(pns) Monitor & Merrimac battle; Confed sub torp bt; Ja75(pns, old prnts) salvaging Civil War Monitor off Cape Hatteras

Square Riggers &c. F37 (Villiers) clippers; Ag68 (Villiers, pic map) era of sq riggers & crafts preserved at Mystic Seaport, Ct; Ja38(1865 phot) whalg ss & bbls of whale oil unloaded; Ap32 sq-rs phot in S.F. 1866; My48 & Ja35 sq riggers & Aland isl; My40 last call of sq-rs at Cork, 1939; D76(f, drg, map) sq rigger trng ss fm many natns in Bicen meet at Newport, Ct, & NY harbor; Jl55 Coast Grd trng cruise in sq riggers; Ja68 Danish trng s, Virg isl *(See also VOYAGES for more sailg ss.)*

River & Coastal Boats. Ap63 side- & stern-wheelers; N60, Ap23, Jl56b, Ap48, N58 & My32 Miss sternwheelers; My32 showbts; r packets racg; N65 & F50c side-wheelers & flat-bott bts (old pr); S53c sternwheelers on Yukon; O40 same, Colom; Ap33 same on Parag rs; Je53c keelbt used by Miss explorers (for movie "Big Sky"); F77 old-style flatbt on Ohio; ann flatbt race, Ky; Ag64, Mr52 & N37 paddle-wheelers on Afr rivs; F76 passenger s on Ob riv, Sib; My65 & F53c Nile feluccas, cargo sailbts; S74(f;pn), My69 & D52c Arab dhows & bldg same; Ja60, N48 & N37 Arabs dhows & zarugs; Ja30 mahailah, cargo bt on Iraq rs 5M yrs; Je32 baggalas, Iran coasters

D71, O71 & N64 & S32(Chin) & F66(Viet) workg junks; O79(2p) polg carg sampan on Chin r; N58 Kashmir & Upper Miss housebts

S36 Ozark cable ferry, Ark; F43 cable ferry for trucks powerd by currnt, Alas; My31 old-fash ferry paddle-wh bt on chain; showbt on Miss

Freighters & Canal Boats. Jl78(fdt 3p diagr) supertankers for oil; S69 supertankers, containerized cargo ss &c; Ag73, Ap & Mr59 Gt Lakes freighters; Jl65 small flat-bott freight steamer; Ap67 cargo s & tugs, Rhine; Ag62 first nuclear merchantman NS Savannah

O55 Fr canal barges; Jl74 canal bts of Eng; My63 covered canal barge, Ind; S71 Mo riv barges; Ag64 (Neth), O77 & F68(Danube) & Jl68(Mackenzie r, N Can) barges

Military Ships (Modern) *(See also HIST., MOD: WORLD WAR II & U.S.: ARMED FORCES: Navy)* Mr63 first & lgest nucl aircr carrier Enterprise; Jl42(f) aircr carriers; Mr45(f;11c) battlesh Mo; Ja & Jl59 atomic sub at N Pole; Je64-2 nucl sub Thresher & its lessons; Jl44 LST landg craft; Ja48(f) 1st sub around Horn; Jl74 var bts of US Coast Grd; S41(8pn) naval sg; Mr45(f) hosp ss

Yachts, Small Boats &c. *(See also SPORTS: BOATING; INDUSTRY: FISHING)* Jl63 Lake Ont

sloop racg. Je55 N Eng misc bts. Je68 replica of first "America" yacht 1851, oth yachts, dories, lobster & fishg bts. Me. F51pn yachtg in 1850's. Je64 yachts, schooners, &c off N.S. Je63 pleasure bts incl surf buggy. It Riviera; Ja58 ketch to Fla on Inland Waterway, oth ss

Specialized & Experimental Ships. My65 hydrofoil; Ap57 hydrofoil (hull rides on surface); Mr75, O66 & O63 same as designed by Bell 1919; S69 aircushion bts; Ap62 jet bts up Colo r; Ag62 & O60 amphib jeep; Jl65 amphicar (combin car/motorbt); W Ger, Je41 "swamp buggy" w wheels; N69, Mr65 & D63 airbt, Everglades

Ag75 "divg machine" barrel of 18th c Eng dives 60'; Jl61 inflatable s for airborne undersea exped; Jl54(f,2p drg) bathyscaphe down 2½ mi; My75 (pns) Proj FAMOUS submar Alvin & floatg garage Lulu expl Mid-Atl Ridge; O77 & N79 more on Alvin; My79 Star 2 submers resrch s

Jl74, Mr70(NW Passage to Alas), My68(Finl) & Jl48 (Hudson r) ice-breakers; Jl74 oth spec ss of Coast Grd; Je59 Staten Isl ferry; Ag36 storm safeguards

Miscellaneous; Primitive. Ap61 & S51c gondolas, Venice; D59 Bangkok palace barge

Ja79 & Ap66 fishg outrigger, Sri L; Jl75 primit dugout outriggers of Andaman isl; N60 Filipino outrig canoe (banca); My76 outrig housebt, Philipp, lipa, Bajan fishg vess; Jl48c outrig dugout s, S Pac; Ja45 S Celebes bts; Ja77 cerem canoes of Yami, SW Pac; Jl62 Tahiti canoe of hollowed breadfruit log; My41 makg dugout c, Samoa; N71 dugout canoe, Uganda; Ap62 outrig canoes, Tuamoto archip; D74(7pn) age-old Polynesian outrigs, used in war & migratn; Ap & O76 constr of anc Hawaiian 60' double-hulld voyaging canoe, saild to Tahiti & back; My67 sailg outrig, Pac; N75 Panama Cuna Inds carve dugout canoes w knives; O58 Fiji outrig sailg canoes

F73 shashas of Oman fishermen made of palm fronds; Je74 primit canoe-like barges for fishg, racg, carryg wood & produce, Burma; Ag66 papyrus bts, Lake Chad; F71 & F64 balsa bts, Lake Titicaca, Peru; Ap76 reed bts of Iraq marshes like anc Sumerians'; F58 Iraq reed fishg canoes; F58 Iraq fishg canoes; Ja71 Ra II reconstr of anc reed s (Heyerdahl) to cross Atl; D78(f) reed s "Tigris" (Heyerdahl) blt in Iraq, anc Sumerian type

F63 NW Inds' war canoe; N37(pns) Eastern Inds' canoes; S75, Je56 & O51c kayaks, Grland; S67 kayak exped, Jap

S42 bowl bt (gufa), Je65(Wales), Je31(Ire) & Ap33 (Eng) coracles; My77 coracles of anc & mod Celts

SIAM. *See THAILAND*

SICILY. *See ITALY*

SIKKIM. Mr63; N70 Gangtok, capital; N63 prince weds US girl

SINGAPORE. *(Republic; see also MALAYSIA)* Ag66; N41c2; Jl40; My38; Mr26; Je66 flag

SOMALILAND. *See DJIBOUTI*

SOUTH AFRICA (REPUBLIC) Je77 esp racial probms; Ap31c4(3c); D42c2; Ag42c2 Cape of Good Hope; D71 Zulus: hist, ethnog & social; Je63 Kalahari bushmen

SOUTH AMERICA. Ja31, O27, Mr30 flying thru many lands; N33 r trip, Braz, Venez, Guianas; Ja67 nat pks in Peru, Chile, Arg, &c

SOUTH GEORGIA ISL. Ja55 "penquin land" whaling station; Ap22 wildlife

SOUTH VIETNAM. *See INDOCHINA*

SOUTHWEST AFRICA. *(NAMIBIA; under UN arbitration)* Ap30

SPACE FLIGHT. *(NASA projects; r=rocket, sat=satellite, sp=space)*

Chronological List. *(for moon flights see subh below)*

O50c V-2's at White Sands Prov Ground, NM
S46, Ap56(4pn), D57(5pn) early sats
Ag55(f,2p) medic resrch
Ap56(4pn) new devels fm V-2
Ap57b Army rs probe ionosph
F59 Pioneer 1-3; Pio 1(10/11/58) & gantry; Pio 3(12/6/58)
O59(3pn) Canaveral range, trackg statns Carib-S Atl; Pio 4 liftoff 3/59; Jupiter, Titan, Polaris, Atlas rs
Jl60(4pn) Proj Mercury, rev of resrch & mfr; model rs; Atlases on assemb line; Saturn; r resrch
Ag60 Tiros 1 weather-eye sat launchd 4/1/60 phots Earth
My61 Proj Mercury; Merc & Redstone on gantry(2p), capsules & mfrg pl; Titan ICBM launchd; chart of 23 sats in orbit; air recov of Discoverer 14; sp chimps
S61-2(pns) Proj Merc & many sats; Shepard & Freedom 7, 1st planned sp flight 5/5/61; pilot's story by Shepard
F62(pns) trackg Merc capsule; rev of round-world statns & preps
My62(pns) Telstar communic sat & detailed plans
Je62(pns) Glenn's 3 orbits in Friendship 7(2/20/62); 2p view of liftoff; maps of orbits
S62(pns) X-15 ½ plane ½ missile tested w AF & Navy
My63(4pn) Mariner 2 Venus probe launchd 8/27/62; 21,700 mi fm V closest 12/14/62, 36 mill mi fm Earth
Ja65(2pn) Proj Gemini 4 prep
S65 Gemini 4 flight & sp walk by White & McDivitt 6/3/65
F65(fdt) Nimbus 1 weather-eye sat views Earth pole-pole 9/6/64
Ap66(pns) Gemini 6 & 7, Borman/Lovell & Schirra/Stafford sp rendezvous 12/15/65
N66(fdt) phots of Earth fm Gem 4-6
D67(5pn) Mars & fut Mariner & Voyager explor flights; Marine 4 flyby of Mars in '65
Ag70(fdt,16pn) brf accts & pns of planets & proj visits 1970-78
F73-2(6pn,fdt,drgs) Mariner 9 to Mars, photomappg since 11/71
O74-3(fdt,pns,diagrs) Skylab 1-3 view Earth, Sun &c, 5/73-2/74; many phots of Earth regions
F75(2pn,diagrs) Pioneer 10-11 observe Jupiter on 21 mo flight launchd 3/3/72
Je75(pns,charts) Mariner 10 phots Venus & Mercury on 21 wk voy launchd 11/3/73; phots of Merc
F76(pn,diagr) Apollo-Soyuz(US-Russ) linkup in sp 7/75
Jl76(8pn) Asimov report on "L-5" torus sp colony

plannd for 2026
Jl76-2(diagrs, "Port USA" map supp) Landsat 1 launchd 7/23/72(joind by 2 1/75) views & maps Earth & land quality & use; same sat studies griz bear habitat
Ja77-2(fdt,pns,diagrs) Mars seen fm Viking 1-2; landed 7/20/76 & 9/3/76; prelim search for life signs
O79 Skylab's fiery finish over Austl

Moon Flights. *(Chronological order)*
F58(pns,old prnts,diagrs) fictional flights, proj flights; maps of m
F59(pn,diagr) proj m flights
O62(many pns of proj craft) robots to m; Ranger 5 proj; LEM described
Mr64(fdt,18pn,diagrs) Ranger 7 m flight prep
N64(fdt,2pn) "Moon close up," Ranger 7 proj; studies of m surf fm 34 mi, 7/31/64
O66(fdt,pns) Proj Apollo, Surveyor 1 phot of m, launchd 5/30/66; robot m lander, sent back 11M splend pix
My69(fdt,pns) Apollo 8 (Borman, Lovell, Anders) flies arnd m 12/24/68
D69-5(fdt,pns) Apollo 11 lands on m (Armstrong, Aldrin, Collins) 7/20/69; pix of & fm LEM; m rocks
Jl71(doub fdt,4p panoramas, drgs) Apollo 14 Cone Crater walk(2/5-6/71) (Shepard, Mitchell, Roosa); Antares lunar module
F72(fdts,pns) Apollo 15 to m 7/71(Scott, Irwin, Worden); 17 mi drive on Rover; m rocks
D72 Apollo 16 to m 4/72 (Duke, Young, Mattingly) m-scapes, Earth fm 10M mi; UV phots of Earth & corona
S73-3(fdt,drgs,pns) Apollo 17 on m 12/72 (Cernan, Evans, Schmitt) "final mission"; LM Challenger in Taurus-Littrow vall; clo views of craters, surf feats; detaild acct of m, sensors installd (pn); layers of Earth & m compard; rock samples, walkg on m (by Scott)

Incidentals. Je78 hist shown in Natnl Air & Space Mus, Wash; S67 scenes at Manned Spacecraft Cen, Houston; D66(pt) mfr of Apollo heat shield, sat-trackg cameras, Mass; N67(pt) sat trackg sta, Austl; Ag69(pt) Martin Marietta Sp Cen, Denver, showg devices for weightless movemt

SPAIN. Mr78, Mr65, Ap50c, Mr29c4(entire); Mr36-2 duot; Ja31c2 N S; Ag24c3 Moorish S; Ag31 Madrid; O36 civil war; F37(f) esc fm Madrid; Ap51c Seville & Holy Wk; Ag68, F54c & Ja22 Basques; Je66 Basque sheepherders in Am West; D74 & Mr56 Pyrenees; Ag49c, O33 & Mr18 Andorra, Pyrenees; S49 Basques nettg pigeons; Ja33 Montserrat shrine; Jl66 & S40 Gibraltar; Je75(f) Andalusia; O57 gypsy cave dwellers of Andalusia; Mr58 Peterson rare bird photos

Andorra. *(Admin jointly by Spain & France)* Ag49c; O33; Mr18; all incl Pyrenees mts

Balearic Isl. My76, My57; Ag28c2

Canary Isl. Ap55; My30c4(3c); Ja69 Lanzarote (isl of volc cinders)

History. D77 Span galleons of 1494-1750

SPITZBERGEN. *See NORWAY*

SPORTS & RECREATION. *(See also FESTIVALS, INDUSTRY ENTERTAINMENT; U.S. NATNL PKS; VOYAGES)* Ag19 geog of games; O64(pns) hist of Olympic games

Camping, Hiking &c. My42c Yukon campg; log cabin, tentg, raftg; Ag73(f,drgs) survival on wold herbs &c, SW; Jl72(f) same on des isl (herbs, shelif, berries); O52c ridg & campg, NC; Jl77 campg, Noatak r, Alas; My72 hikg thru Yellowstone; Je71 backpackg, tentg on Pacif Crest trail, Casc & Sierra Nev ranges; My56 hikg, ridg, Waterton-Glac Internat Pk; My68 campg, ridg, boatg, climbg, N Cascade mts, Wa; Je73 hikg, mteerg, campg, BC & Alta Rockies; F70 campg, white water boatg, Salmon r, Id

Ag49c hikg Appalachian trail, Me-Ga; Ap77(f) & Ag79(f) Jenkins' hike acr US; Jl55 Eur youth hostels; Ag50 woman hikes Edinb-Lond & S51c Aus-Venice; O78 woman travels w donkey in Cevennes, Fr, in Stevenson's ftsteps; My78 woman's solo trek acr Austl desert w camels

Mountain Climbing. *(See also PHYS GEOG:MTS and regional entries, e.g. India)* Jl65 Mt Kennedy, Yukon; Jl53 glac climbg of Olympus & Rainier, Wa; Je54c(f) Sierra Nev mts, Cal; Je74 Yosemite pk; rock scalg on Half Dome; Ag51(f) & Ag69 Col mts & rock scalg; N62 sandstone towers, Ut; Je48c Tetons, Wy; Ag49c Appalachians; Je76 on top of rocky tooth, WV

D76 Torre Egger, S Andes; Ag34c2(maniess), S65 & O56b Swiss Alps; Jl54c2 Hillary climbs Everest; Mr79 10 US women climb Annapurna, Nepal; 2 lost, My79 asc of K2, world's 2d highest, Pakis; My43 Minya Konka, China; Ja78 hikg acr Fiordland Nat Pk, NZ; Ag78 hikg over NZ Alps

Biking & Misc. Vehicles. *(For racing see subhd FIELD & TEAM SPORTS)* My73-2(f) boom in bicycles; bikepackg acr Alas & Can; My71 motorcyclg US-Mex border, Cal-Gulf; N38 girl cycles Romania; Ag40 cyclg, Malta; N67 sandsailg fleet crosses Sahara; My66 land-yacht, Cal

Racing Vehicles; Other Contests. *(For gliders & balloons see subhds of AVIATION)* F69 Atlanta 500, stock car race, & stadium; O72 "Mex 1000" car race down Baja Cal; Ap55 soap-box derby, Akron, O; Mr74 motorcycle race on ice speedway, Bav; S74 "motorball" soccer on cycles, E Ger; D64 gokart racg (King Hussein), Amman, Jor

Ap77(f) kite-flyg, Jap; N69 huge fanciful kites dual, Bali

Winter Sports.
SKIING. F59(f) best genl; coast-coast, US; N36c2(f) N Eng ski trails; Je55 NH ski trip; O68 ski lift train, Gt Smokies N Pk, Tn; My76 Big Sky ski resort, Mt; Je50c ski lift, Mt; D76 & Ap66 Wy; Mr73 Sun Vall, Id; Mr75 skig down volc side, Haw; O73 s on mt, Chile; Ja61 & Mr33 (duot) Swiss Alps; S60 cable cars to skiers' paradise, Mt Blanc; S65 250' jump, '64 Olympics, Innsbruck; Jl71 Norw; My68 s jump, Fin
OTHER. Ja58, My67 & D61 toboggang, hockey, curlg, ice fishg, ice-canoe racg acr riv, swimg thru ice, sleighs on ice, ice sculp & palace, fig skatg, Que & St Lawr; Jl63 hockey, Ont; Je68 snowmobile, Me; D58(Minn) & Ag67 (Lake Champlain, NY) ice fishg; Ap56b curlg, Eng Lakes; Mr74 cycle racg on ice speedway, Bav Alps, & curlg; My71 swimg in Neva midwint, Leningrad, & street

hockey; D68 snow festiv & sculp, Jap

Water Sports.

BATHING BEACHES. Ag50c Gloucester, Mass; Je77 Old Orchard, Me; Ag48c Newport, RI; N63(2p) Jones Beach, NY; My33c Atl City & oth, NJ; F72 Ocn City, NJ; Jl38c Rehoboth b, Del; S47c Va B, Va; O55 Cape Hatteras &c, NC; S69 Nag's Hd, pioneer b resort fm 1830's, NC; S36 Lake Mich, In; D52c La Jolla, Cal; My54c Waikiki, Haw

F54c(2p) Berm; F56 VI; Mr55(2p) & S39 Arpoador & Copacabana, Rio de J; N48 Pocitos, Uru; Ag67 B Aires; Mr75 Mar La Plata b, Arg

Ja35 Colwell b, Isle of Wight ("bathg machines"); N46c Helgoland, N Ger; Ag77 N Sea, Ger; My48c Belg; Mr40c Camogli, It Riviera; Mr56 Biarritz, Fr; N48c(av) Nazaré, bathg tents, Port; Ag53c Cape Town, S Af; D36c Sydney, Austl

SURFING &c. Jl60 & My35(duot) surfboardg, Haw; Ap71 same, S44 same, Cal; N58 kite-borne water skig, Fl; Je74 water ski race, Lake Mead, Nev; Mr69 wat skig, Mich; Jl77 log-rollg, Wis; Ag77 wind surfg, Kiel Bay, Ger; F79 & S63 surfg, Austl; Mr68 325 lb king of Tonga surfboardg, Pacif

CANOEING. Ag31(f) Mackenzie r, NW Can; Ag57 women canoe Yukon r; Jl33 "Nakwasina" canoes up Inside Passage Tacoma-Juneau, Alas; Jl51c Labrador canoeing; Jl50c Susquehanna r; Ag48c Potomac; Jl65 Danube, S Ger-Black Sea; Mr32 US women "faltbooting" 8 rivs, Ger-Aus; S67 kayakg on Inland Sea, Jap

YACHTING: OTHER CRAFT. Je61(Martha's Vineyd), Mr51c (L I Sound), Jl63(Lake Ont), Ja63(Copenhagen) y; Ag64 & Ag61 Fastnet regatta & y race, Isle of Wight, Eng; Ja77(Seattle), Jl75(Harwich Port, Mass), & D65 (WI) y; Je68 replica of first "America" y, F51pn 1850's y; Ag54c sailg arnd Norway; Je55 N Eng Boatg, y racg, Marblehead, rowg crews, Cambr (also S74); N69 racg sloops, SF Bay

F70 & Jl36(f) white water boatg, Salmon r "of no return", Id; Ap62 turbocr, jet bts up Col r

FISHING. *(See also FISHES, INDUS FISHING)* F39c2 (54pn) fg in Pacif coast streams; Jl68 fg & huntg, Gt Bear Lake, NW Can; Mr72(BC) & My66(Cal) salmon; Ja68 steelhd trout, Or; My49c goggle-fg, Cal; Je71 golden trout, Cal; Jl78 rainbow trout, Gr Canyon, Az; Je48 lg brook trout, Lab; Je46c bass, Cape Cod; Mr51c marlin, L I; O76 panf & nettg white perch, Potomac; O55 channel bass, NC; Ja50c barracuda, grouper &c, Fl; Mr68 marlin, Ala; S79 crappie, La; Ag73 coho salmon, Gt Lakes; Jl37 muskie, Wis; S49c bass & muskie, Mn; Je50c ice anglg in Mt r; Je51 125 lb sturgeon, Id; F67 bluefin, Baham; Mr41 marlin, broadbill off S Am; Ja72 Ger brown trout, NZ; Ap52c huge trout & in smokehouse, NZ; S76 f-spearg, Nauru isl, Pac

MISC. WATER SPORTS. My71 skindivg, VI; Ja62 & Ja64(Fla) & S70 & F67(Baham) scuba diving; Ag62 genl & clambake, Cape Cod; S68 & Ag48c clam & lobster bake, RI seashore

Amusement Parks. *See INDUS ENTERTAINMENT.*

Field & Team Sports; Games. N69 Oakland-Alameda Co Coliseum, stadium; Mr74 Mem Stadium, Lincoln, Neb, fm air; Ja79 Hollywd Bowl

Jl52 golf in 14 lands; F62 g at Greensboro, N C; Ja70 g course & pool, Death Vall; Ap61 g, Scot; O77 g course on shore, Domin Rep; O64 Jap baseball & golf range; Mr74 3-deck golf drivg range, Jap; D79 same, Seoul, Kor; O77 tennis ranch, Ariz; Mr51c same, Forest Hills, NY

S67 Jap baseball, football; O77 sandlot baseball, Domin Rep; Ap70 Austl rules ftball; D73(Gr'land), Mr55(Braz) & F62(Yugo) soccer; Je65 (Wales) & Ag64 (N Irel) & F79(Austl), rugby; Ap62(N Z) & Ag67 (Pac isl) cricket; Je79 basketball, Ukraine

Ag63 & F46c((Devon, Eng), S63(Austl), Je61(Mass), Ap31(S Af), Ja72(N Z), N68(Austl women), Mr72(B C) & D61(Can) & Mr51(NY) bowling on green; Je69 lacrosse, Mass; S69 hurling (Irish field hockey), road bowling; S74 hockey on asphalt, Boston, & Bost Marathon; Ag68 hulama, versn of old Aztec game(12-lb ball hit w hip only), jai alai; Ap61, Jl56, Jl52c & Ag35c caber & hammer toss, Scot; Ag73 Swed form of same; Jl69 toss 184-lb boulder, Switz; Ag68 liftg 247-lb stone ball; Jl65 tug of war in kilts, Arran isl, Scot; F71 same, Esk women

F68 gymnasts, Czech; Ap39 calisthenics, NY Jones Beach; O64 "free boxing," Cambodia; Jl67 boxing, Thailand; O72 Waura tribe wrestlg, Braz; Ja68 Turk wrestlers; F51 wrestling, Sudan tribe; Mr62 wrestling, Mongolia; D60 Jap sumo; O64 & F32 Jap sumo & karate; Jl51 duelg, Fr

Ap63 roulette, Monte Carlo; Ap69 doub-deck gambig casino, mah-jongg, Macao; F77 street game of checkers Harlem, NY; O77 playg chess in thermal baths, Budapest; D52c dama, Arab checker g, Kuw; Mr65 anc Bedouin game w stone counters, Isr; Mr76 marbles, Balearics; Mr64 carom board, Yemen; D63 shuffleboard, St Petersbg; Ap69 blanket-tossing Eskimos; Je68 Berber teenagers play leapfrog, Morocco

Animal Racing, Fighting, Hunting. *(For fishing see subhd WATER SPORTS)* Ap46c & N24 tiger hunt, Ind; D20c(6pn Fuertes) & F42 falconry; S79(Bahrain), My69 & D52c(Kuwait), Ap54c(Arab) & S67(Kirgiz eagle) & Ag42(Jap) falconry

Ap64, Mr63(Ariz), O56(S D), Je50c(Mont), Ap66 & Ag45c(w horse & Brahman bull) (Wyo), S77(cowgirl, Cal), O76(all girl, Alta) & O70(Calgary, Alta) & Mr67 (Mex) rodeos; Ag64 & My56(Fr), Je67(w Picasso, Fr), Mr65 (Pamplona), Ap51c(Seville), Mr78(bull charge, Sp), Ag24(Spain), Ag68(Spain, practice), O65 (Portug), Mr63(Venez), Ag64(Mozamb, no killing), O64 (Jap, by bulls), O61 & F55(Mex) & S67(Houston, Tex) all bullfights; Ag76 throwg bull (toros coleados), Venez; Ap 74 19th c Lond rat-pit; D62(P Rico), Ag62 (Indonesia) & S66(Philipp) cockfights; S64(Md) blue crab racing; Jl73 Siamese fightg fish duel; Je74 ostrich racg; My61 bull racing, Indonesia; My63 camel racing, Ind

S58(Vienna), N54c(NY) & Jl53c(Dublin) horse shows; Ag67(Saratoga, NY), Ag48c(RI), My74 & Jl42c (Ky), Ag64(N Ire), Je66(Epsom Downs, Eng), Ag77 (Baden-Baden Ger), F69(Kenya) & Ap52c(NZ) horse races; S54c sulky race, Cal st fair; Jl52c trottg horses, NJ; Mr51 & N33(NY), Je69(Malta), O48(India) polo; N73 & Ja68 Afghan polo w dead calf as ball; O79 joustg revival, Eng

Ag63 riding & to hounds, Devon; Je74 fox-hunter closeup, Eng; N65 same, St. Louis; Ap70 & My50c &

Jl49c fox hunt, Va; My74 same, Ky; F55c mt lion treed by dogs, Mex; Jl63 Toronto race track; Ja54c Westminster dog show; Mr78 duck shoot, Ark; Ap77 huntg snow geese, St. Lawr *(For hunting see also INDUS: ANIMAL PRODUCTS)*

SRI LANKA. *(CEYLON)* Ja79; Ap66, Jl48, Jl32 Perahera processns; N46 Sigiriya

STEVENSON, R.L. O78(old prnts) followg his "travels w a donkey in the Cevennes," S Fr

SUDAN. F53c; My55b Nile; N66, F51 & O29 Nuba & oth tribes; Je34 pilg to Mecca, pt S

SUMERIA. D66. *See also MESOPOTAMIA*

SUN. *See PHYS GEOG ASTRONOMY*

SURINAM. *(Formerly Dutch Guiana)* Ap43c2; Ap69 jungle village, Tepoe

SWAZILAND. Ag69(feat); Ja78 Zulu king weds Swazi princess

SWEDEN. Ap63; O28c3; Je40c2; Jl34c2 hist castles & palaces; S39 rural; Ja76(f) Stockholm; N50c pt, coast (Baltic cruise); Ja62 Stockholm's harbor in 1628; raising battleship; F64 Stockholm, LBJ flight; Ag73 Gotland

SWITZERLAND. Jl69, O56, Ag50c; S65(pn of Mont Blanc range) Alps (chfly S); Ag34c2 Alps; Je55 Val d'Herens Alps; Ap41; Ag36c2 historic Gruyeres; D37 Lake Geneva; Ja63 Alps fm air(hist balloon flight); Ja61 & Mr33 duot, esp skiing; Ja57 St Bernard hospice; Ag59 Pestalozzi village for Eur waifs, Appenzel prov; N68 Tibetans find refuge; O58 Vevey winegrowers' festival

SYRIA. S78; Ap74 Damascus; D46c pt, D38c2 pt, D26 mostly S; D78(Ebla), Jl33 & O30 archaeology

TAIWAN. *See PACIFIC ISLANDS*

TANZANIA. *(Before 1964 TANGANYIKA & ZANZIBAR)* Ap75(fdt); O54c spearing lions w Masai; S64 Peace Corps (brf); Mr47c weighing Aga Khan; F52c Zanzibar

TECHNOLOGY, HISTORICAL. *(See also ARCHITECTURE, ARTS & CRAFTS, AVIATION, BRIDGES, INDUSTRY subheadings, SCIENCE, TRANSPORTATION, and WEAPONS)*

Engineering. Ja51c(pn) hauling 40-ton statue, anc Mesopotamia; D67 ruins of Roman rd, Caesarea, Israel; S51 same, Brenner Pass; Je70 & Mr37 Via Appia, Rome; My75 & Jl51 & N46 Pont du Gard Roman aqueduct to Nimes; Mr37 same, Carthage; N48av Lisbon's 18th c aqued; Jl51 wooden water conduits, Phila, abandoned ca 1825

My77 anc Celtic metalwk, blacksmithg; Ap67(5pn) anc Grk clock tower of Andronikos; S47(f) clockmakg; Ap79 15th c astron clock, Prague; N78 planet cl & perpet calend of 1567 & alarm cl; S47 earliest portable cl-watch, 1504, Paris cl of 1364; S77 Da Vinci inventns: cart gears, file maker, water powerd saw, screw-cuttg lathe, pile driver, windlass, studies of flight, war machines, water walkers; D75 anc observatory, Chichen Itza, Mex; Jl31 1st astron observ in Am at Uaxactun (Maya); Mr74 Munmch town hall glockenspiel w animated figs; My75 & O50 geom patterns found in Peru desert made by pre-Inca Nascans; Ja77 stone cairns of Plains Inds used as astron tool 1M yrs ago

Implements. Je66 cutting & scraping tools of flint, New Brit; O51c bow drill of Gr'land Eskimos; Ag72 fire by spinng wooden drill, Philippine tribe; D77 gold doub-cased Eng watch of 1741, brass dividers, portable & pocket sundials; household devices of 15-1700 Span colonists; D79 old Eng clock & pts; pocket calculator; moon & sun dials, compass of late 16th c fm shipwreck of 1724; Mr50c old sextant; Jl72 astrolabe; Je76 Span astrolabe of 1622

Mr50c colonial fireplace; N51c early Amer kitchen; D68 colon kitchen, "shoo-fly chair," Wmsburg; O76 colon kitch w copper still; Mr49 colon spice grinder; Ja68 old coffee grinder, Mex border store; F76 old wood hand wine-press, wicker strainer; Ag48c wheel-operated hand apple-parer, R.I; Ag54c butter churn of Laplanders

Je50c drugstore of 1860's, Va City, Montana; O54c colon Wmsburg carpentry (early lathe), apothecary, bootmaker, barber, bake shops, spinning wheel (see also D68); Ja34 simple lathe turnd by bowstring, Khartoum; D70 18th c shoe cobbler, dye maker, Old Salem, N.C; Ag49c wheelwright & blacksmith shops, Va; N71 blacksmith shop, US south; Je35 vill smithy w crude bellows, Angola; Ap79 steel rim shrunk on wheel in old wagon factory, Mass; S38 hand-forgg iron at 8th generatn smithy, Ct; Ag68 harpoons forged at Mystic, Ct, Seaport & ship carver's shop; Jl49 combin bathtub & sofa, Victorian, Pittsbg; Ap47 wooden bathtub, Jap; Ja68 handmade padlock & keys, Virg isl; Ag68 hand-whittled rake teeth, Spain; Ag54(Finl); My73(Russ), F54(Hong Kong) & O48(Ind) abacus

Je67 old split rail fence; hand water pump, Ill; Ag48 hand water pump, Md; S46c old oak bucket well w hoist mech, Ark; Jl67 shoulder yokes to carry buckets, Thailand; S50c yoke to carry milk pails, Queb; Jl75 Franklin's inventns: productn of static elec; lightning rods; 18th c fire engine; S66 theodolite, sunglasses, odometer, silv coffee urn made in France, polygraph, dumb-waiter for wine, Jefferson's inventions; N70 lye-soapmakg, Ozarks; D31 old ash-hopper to make lye, Ala; Jl66 hand-cranked cotton gin & spinning wheel, Thailand; O54c spinning wheel, colon Wmsburg & same, Hebrides & D33 one in use, Cape Hatteras, NC *(see also ARTS & CRAFTS: Weaving)*

Je70 millstone fm 4th c BC Grk shipwreck; N73 anc Turkoman mill crushes cottonseed; N77 grindg corn w stone wheel powerd by mt stream, Vt; Ag48 old mill ground snuff, R.I; w'mill w revolvg bonnet grindg cornmeal; D75(f) windmills of past, pres & fut; My76 w'mills blt by Moors, Mallorca; My29 w'mills, Eng Fenlands; Ag48c sailless windmill (revolving bonnet) R.I; O48 w'mill w sails, Portug; F49c w'mill; Denm; Ap50c w'mill, Spain; N50 wooden sail w'mill, Aland isl; S50c stone w'mill, Queb; Jl62 horse-powerd sorghum mill; overshot mill wheel, Tenn; Ap70(W Va) & Ag49c(Va) old water mill wheel, Va; O66 wheel used by Sherpas, Nepal (after long using prayer wheels turned by water power)

Lighthouses. Ag36(pn) many famous ls; anc l, Pharos of Alexandria; Je68 Pemaquid Pt l blt 1827, Me; Ap70 Austl kerosene lamp; Ag50c Martha's Vineyard; Je70 Brant Pt light, & Ap44 Sankaty Hd, Nantucket; Ag48 elec lamp bull's-eye lenses in l, R.I; Mr51c & Ap39

Montauk Pt, L I; My33 Barnegat l of 1858, NJ; D33 Cape Hatteras & Bodie isl, NC; Ja69 Heceta Hd l, Ore; S50c Gaspe, St Lawr; F54c Bermuda coral reefs; Jl38 Eddystone l, Plymouth's 4th, Eng; Ag54 Ryvingen isl, Nor; F32 Den

THAILAND. *(SIAM)* Jl67; Je61; F47c2; My34c3(2c); Jl73 Bangkok; Mr49c pt; D59 2 arts in pt; N41 wartime; Jl66 Lua, mt people; F72 Karen tribe in NW; F28 jungle; Mr22 hunting chaulmoogra tree

THEATER. *See ARTS & CRAFTS: PERFORMING ARTS*

TIBET. Jl55; Ag46-2; My49c(21pn); F30; Ag26; S21(E T); Mr16 Lhasa; O35c2 relig cerem; Jl31c & Mr63(Sikkim) devil dancers; N68 Tibetans find refuge in Switz; Mr52 Assam-Tibet quake

TRANSJORDAN. *See JORDAN*

TRANSPORTATION (METHODS) *(See also AVIATION; BRIDGES; CANALS; INDUS; SHIPPING; SHIPS)*

General, Routes, &c. S69(pns) revol in t: expwys, tube trains, planes, air-cushion bts, containerized cargo, supertankers, control ctrs &c; Jl76(fdt maps) devel of t routes in USS 1776-1976; N70 computers aid t; Je59 traff signal netwk control at HQ, Munich; Jl72 Paris traf jams controlld by TV consoles; D43c(16 pn) Amer t vital to victory; D41 US superhwys, bridges &c; Ap23 Amer rwy traffic; N30 traffic, cars & buses, NYC; O37 NYC traffic in 1887; F74(f) cross-country truckers race clock; S46 US traveling; Jl50 US bus trav; O23 auto indus; Ap39 Gr Centr Pky, L I, "arterial hwy"; My33 prize-winng superhwy brdige of 1930, NJ; airports, new "cloverleaf" plan, NJ; Je54av & D41 LA freeways; F68 US interstate superhwys: constr, traffic control, servicing &c; O62 world's busiest intersectn, LA Freeway's "Stack", N56 NY Thruway; N68 Natchez Trace Pkwy & hist, Tenn-Miss; N77 bldg rds in Braz jung; Mr69 elev expwy, 4-lane expwy Seoul-Pusan, Korea; My69 expwys in Kuwait desert; D41 US rds; F43 Alcan h'way; Ag73 hwys in sandy desert, Alg; Ja59b Arctic as sea rte; F63 t in Antarctic; O40

Water & Air. *(See also AVIATION; CANALS; INDUS: SHIPPING; SHIPS)* Mr & Ap59 St Lawr Seaway; S63 voyageurs' "grand portage" route, Lake Superior to Winnipeg, Can; My67 St Lawr Seaway, ships; Ja38 Q Mary, famous liners at NY piers; My37 & My36 Normandie in dock & enterg Le Havre; Je67 barges on Ill Waterway; Jl68(Mackenzie r, N Can) barges; Ap67 cargo ships, Rhine; D45-2 shipping war supplies; laying pipe under Channel; Je61 Lond port (see also US:NY); My37 Eur riv travel; Je59 Staten Isl ferry; D50 postman for Gt Lakes bts

Ag77(f) air traffic safety; Mr57 Milit Air Transport Serv; S65 copter carrying supplies, Alps; Ap69 Alaska's busiest seaplane base (priv planes chiefly)

Railroads. Ap23 Am rwy traffic; N36 trains (genl, yards, life on board); Ap32 woodburng loco on 1st transcont line, 1869; Mr36 trains of 1865 & 1935; S37 elec train beside ox-drawn cotton wagon; Jl35 Pennsy new elec train; Ag45 mammoth steam loco & heavy war traffic, Wy; Ag40 assemblg 46 mi of coal cars at a time, WV; Ap55 rr sta, Cincinnati, O; Mr65 funicular rwy, Pittsb; Jl69 funicular type elevator, La Jolla, Cal; Mr40 same, Mt Vesuv; F54 same, H Kong; N69, Je54c, S46, Mr43 San Fran cable car pulled by understreet elec drivn cable; O65 cable car, Lisbon; Je55(3c), My51c & Jl37 Mt Wash cog rwy; Jl68 narr gauge rr on Yukon r; My59 1-car train thru Cal forest; S62 monorail, Seattle; Ag77 experim Transrapid train, Ger; S69 new Jap Tokaido intercity expr avg over 100 mph; tube trains *(See also BRIDGES & TUNNELS)*

Urban Transit & Misc. *(See also below AUTOS)* N69 Bay Area Rapid Transit sys underwater, undergr & elev line, San Fran; My32 inclined plane str rwys, Cincinnati; Je67 "El", Chic Loop; My52(Brussels) & S51c (Innsbruck,Aus) trolleys; Mr66 Moscow subway, escalators; Ap71 Budapest trams; O64 subway & elev expressway, Tokyo; My67 trolley-bus, Siberia; Jl52 doub-deck Lond bus, Phila; Ap31 hansom cabs, buses, trolleys, Cape Town

My73 new boom in bikes; S72 antique bike club w high-wheelers, Mass; D52c antiq bike; My71 motor traffic, Leningrad; N64 buses & freight tricycles(pedicabs), Shanghai; Ag66 bicycles, trishaws, scooters &c, Singapore; S66 pedicap traffic, Sulu archipel; Ja71 tricycle taxis, pedicab, Java; Ag64 ricksha, Mozamb; F68 bicyclg fm wk in flds, Czech; Je59 ricksha ride, H Kong; Ja67 painted cycle rickshas, Dacca; S72 str scene w pedicabs, buses, taxis, Dacca

D65 chairlift up mt; My66(Calif) & N67 (Sahara) sand-sailing & land-yachting; 1 of 1600; My71 dune-buggy on Calif desert; O70 snowmobile, Manit; S77 Lapps use snowmob for haulg runaway reindeer

Horse-Drawn & Historic. My77(pns) anc Celtic battle chariots; Ag62(old prints) Old Boston Post Rd & stage coaches; Ja51 & S31 Concord stage-coach; Ap74 Eng stage coach of 1860's that once carried Dickens; Ja69 stage-coach, 4 horses, Ore roundup; Ap66(pn) prairie schooner train, Ut; N65 Conestoga, other wagons, early r'rds in west; Ja68(pn) cov wagons; Mr36c old prospector w burros, small coverd wagon; Je34 still used for movg, Ky-Mo & Cumb Gap, Ky; N75(2p) drawg pig to mkt in h & wagon, Romania; My51c horse team haulng stone on sledge, Mass; S38c 1-hoss open sleigh,Ct; F35 sleigh parties, Wash, DC; Ap43 2-horse wagon thru cov bridge; Jl77 2-horse-drawn sled, Turk mts; F49c coach & pair, Den; F51c(pn) 4-in-hand coach; O77 hired carriage, Santiago; Ja38 5-in-hd coach, Hung; S53c, Ag46, F37 & Ag35 coronatn coach for royalty, Lond; Je66 same for Lord Mayor; O54c royal phaeton (carriage), Wmsburg, Va; My74 h & carriage, Amst; Ap68 royal coach, Neth; Je68 fiacre, Prater Pk, Vienna; D69 2-horse cab, Turkey; F66(St Aug, Fla), F71(New Orl), Mr52c(Mackinac isl) carriage drivers; Jl53c & My40c & Je31 horse-drawn carts, Irel; Ag76 milk deliv by h, Edinb; O79 horse drawn brewery dray, Lond; Ap70 Mennonites' buggies, Va; My43c old-time farm wagon, Ozarks; Ag65 & Jl41 Amish buggies; O66 horsedrawn sightseeing coach, Chic 1904; Je72 gypsy wagons, horses, Eng; D32 horse-drn wood wheeld wag, Manchuria

Other Draft Animals. Mr53c donkey carriage, Dodecanese; Jl72 donk cart of Afghan farmer; Je54c 20-mule borax team(phot); Ag53c 12 donks haulg to

mkt, Mozam; D45 army mules; Ap72 camel carav in winter,Afg; Ap65 mt rds, camel caravan w myrrh & frankincense; Ja60 & S42 camel; N65(Niger, dromedary), N52c(Pakis, Bactrian) & Mr64(Yemen, camel) caravans; D35 camel-cart wat deliv & pullg salt trains, S Yem; Ja77 3 mi camel caravan, Pakis, & Mr31 camel, yak, ponies & sheep as pack animals, Tibet; N76 yaks, Bhutan; Ja69 camel used to pull plow, carry sightseers, Canaries; F77 camel pullg cart, Ind; O79 donk haulg suitcases, Eng; Ap74 camels, donkeys carry water skins, Niger.

D73 llamas carryg packs, Peru; F64 reindeer sledge, Lapland; O64 elephant, rickshas, Cambodia; O70 elephants push freight cars & throw switches, India; My34 elephs brk up log jams, Thai; N75(Hunza) & Mr60 yak.

Ap28(Umbria) & Ja35c(Azores) oxcarts; F53c oxen for cartg & plowg, Fr; Jl67 bullock cart, Thailand; N52c oxcarts haul cotton, Pakis; Ja51c painted oxcarts, Java; F63 oxcarts & wheelmaking, Burma; Mr71 oxcarts; S C & Burma; N32 zebu oxen haulg carts, Sri L; Ap31 "prairie schooners" of Boers drn by ox teams, S Af

F35 dog cart, horse & ox-drawn sleds carryg wood, ice &c,Que; S50 d cart unloads fish dory, Que; My23 3-dog cart, Neth; Mr74 by dogsled acr N Can; My64 & F65 Arctic dog teams; S50c dog team for cart, Que; Ap76 dog pullg boy in cart, Ire; Ag38 d haulg hog to mkt in cart, Cz; Ag50c & Ag36 dog hauling milk cart, Switz.

Human Porters. My63(fdt) men & women carry mortar & rocks to build giant dam, Ind; N76 Bhutan porter w 200 lb load of potat; Mr35 porters w 150 lb loads, Nepal; N66 Nuba women carry baskets on head; My53c Korean w 400 lb flour; Ja51c farm wives carry loads on head, Sumatra, & F68 carry straw loads, Ecua; Ja76 pullg cart of coffee bags, Haiti.

Automobiles. *(See also abv subh GENERAL and main hd INDUS MANUFACTURES)* Jl58 & Mr52c antique cars, Dearborn, Mich; Je66 1903 Renault Landaulette, Lond; Je31 Citroën trans-Asia exped starts (also O31 & Mr32) Ja72 1934 Rolls-Royce, Lond; Je57 trailer caravan thru Eur; Je74 doub-deck sightseer's bus, Yosemite; Ap67 trailer camp, Upper Rhine; S69 elec cars eliminate air pollution *(See also above subh GENERAL &c)*

TREES. *See subh of PLANTS.*

TRINIDAD. *See WEST INDIES.*

TRISTAN DA CUNHA. My62 last eruption & Ja64 results, Ja50c; N38

TUNISIA. Mr37; Ap24c2 incl Carthage

TUNNELS. *See BRIDGES & TUNNELS*

TURKEY. Ag51c; D69(hist map;2pn) coast regions; My45c2, Ja39c2, Ap32c, Mr40; Je62 pt, Ja59 pt, Ja56 pt, N25c2 pt; S64 Peace Corps(brf); My15-3; O29c2 Bosporus; Jl48c & Ap44 Anatolia; Je78(f), O15 & N19c2 Armenia; Je52 & S41 Russ frontier; O73, My15 Istanbul; S57 Robert College, Instanbul; Ag20 Antioch; Jl70, D39c2 & Ja58 & Ap19 Cappadocia cone dwellings; Je72(2p diagr map; pn) anc Aphrodisias

UGANDA. N71 capital, phys feats, occups &c; Mr50c pt; D54c pt; Ja37; Mr62 Mts of the Moon, Ruwenzori range

UNDERWATER SALVAGE. *(See also ARCHAEOLOGY; PHYS. GEOG:OCEANOGRAPHY; SHIPS &c)* My60 & My62 Bronze Age ship 3000 yrs old; Jl63(pn) & Ja54c anc Grk ship 2200 yrs old (Cousteau); Je70 (2pn) 4th c BC Grk ship, earliest ever brought up; N74 (pn) & Ag74 more on same; F69 sarcophagus laden ship sunk in Gulf of Taranto 2-300 AD, cargo raised; S68 1400 yr old wreck off Turk coast & 2 oth sites searched; Je78 1M yr old sh off Tur; glass treas of 11th c Muslim world; Ag79(pn,drg) Chin sh of 1330 salv fm Yellow Sea Korean coast, ceramics

Je69 Span Armada (1588) wrecks salv off N Irel (pn); D41 Br warsh of 1695 off Fl; Ja62 1b28 Swed warship salvaged, Copenhagen; F60(pn) quake-drowned city of Port Royal, Jamaica (1692); D67 same subj(brf); Ja65(3pn) drowned galleons (ca. 1700) yield Sp gold, jewels, off Fla; D77(f; pns, old pr, map/pn supp) many Span treas ships wreckd & salvaged on way home; 1622 drg of free-divg salv meth; Je76(f; pns) Span galleon Atocha sunk off Fla Keys 1622 salv 1971; treas cargo; D79(2pn) 2 Sp cargo sh sunk off Domin Rep 1724 carryg mercury & many gold & crafted obj; Ag75(pn) raisg treas of 1724 fm Dutch ship off Porto Santo, Madeiras; O78(pn) Du cargo sh of 1613 salv at St Helena; cannon, Chin pottery; Jl71 ships sunk off Bermuda; Ja75(drgs, old prints) findg & raisg the Monitor & its brf hist; Mr69 relics of wrecked ships, Door penin, Wis; Je64(pns) down to "Thresher" by bathyscaphe; Je75 ships raised in Suez Canal.

UNITED ARAB EMIRATES. *(Formerly Trucial States; indep. of Britain 1971)* O75 pt; Jl56

UNITED KINGDOM. *See ENGLAND; IRELAND; SCOTLAND.*

UNITED NATIONS. S61(by Stevenson)

UNITED STATES OF AMERICA. *(Articles on the U.S. as a whole are given first, then those on various broad regions. After the sequence of the individual states follow entries on special aspects of the nation: its Armed Forces, Government Services, History, and National Parks.)*

Collective. *(See also ECOLOGY)* Jl61; Je51c & Je40c air phot; Ap77 hike acr US, pt 1: Jenkins hikes NY to Tn, NC & Ala hill farm country; pt 2: Ag79 marries in N Ori & they contin thru Tx, NM, Col, Ut, Id & Or to Pacif; O64 genl sights (Sikh visitor); Ap16c; Ag20 state name origins; N63 state pks; S54c state fairs; S75 Mark Twain's America; Jl76 portf of 6 views; F41 same of 29 il; Ja28 w Lindbergh; My42, D41 h'ways

East. Je55 N Eng; S31c4(3c); S52c & Ag50c N Eng cruises; N36c2 N Eng ski trails; Ja51c Merrimack r; S72 & Ap43c2 Conn r; My51c N Eng mts; Ap76(f) Robt Frost verses illus by N Eng scenes; Je53c founders of N Eng; Ja32 Washington's travels; O52c & Ag36 Smokies; F50c Ohio r; Ap64, S50c & S39 & Jl38c3 Chesapeake region; Jl45c2 hist Potomac; Ag48c down Potomac by canoe; Jl49c Appalachian vall; Ag49c mts, Me-Ga

Midwest. Mr59 & Ap59 & Ap34-2 duot, Gt Lakes; Ag73 Gt Lakes; study of fresh water pollutn & ecol; F77(f) Ohio riv, Pittsb-Cairo; chart of dams, locks; F50c Ohio r; N58 & Ap48 Miss r; S71 Mo r, Mont-Mo; Je48 mapping "breadbasket"; N45 Mo r; Je37 r floods,

erosion

Southeast. O76(f), Jl45c2 hist & Ag48c canoeing, Potomac riv; Ja44c2 Gulf states; F78 Gulf Intracoastal Waterway, coast, Brownsville-N Fl; N60 Lower Miss; Mr49c Dixie indus; Ap48c TVA region; also down Miss on raft; Ja58 Inland Waterway to Fla; Je34c2 S Appal natl pks; O52c, N71 & D43 Cumberland Gap, Tenn, Va, Ky; My26c Va, S C ; Ap48c(pack trip) & Ag36 Gt Smokies mts

Southwest. My71 US-Mex border, Cal-Gulf; O73 lower Col riv & its pollutn; Ag47c upper Col r & Navajo land; Je40 & D48 SW

West. Je49c, Je28c; Jl34 duot, pks; Jl33 duot, scenery; N52c Columbia r; Je53c Lewis & Clark rte; N65 opening the West; N76 bad men of early W, Mont-Mex; Redford rides outlaw trail; Je71 Mex-Can on Pacif Crest trail, nat pks; O42c2 Pac NW; Ag29c2 Santa Fe trail & scenic glories; Je40 & D48 SW; D65 Lynda Johnson at nat pks; O79 hikg on Contin Div, Mt-NM

U.S. BY STATE

Alabama. O75; D31c2; Mr68 Mobile(feat)

Alaska. Je56c3 incl flowers; F79 life on Gulf of A; Je75-2(fdt) impact of mod civiliz on natives & wilderness; proposd pks & wilderness areas; Jl59; S42c3 genl & archaeol; Jl79(maps,fdts) Natnl pks - how much? Mt McKinley (fdts); D79(fdts,rel map) Arc Natnl Wildlife Refuge incl whole NE cor of A; Je65 S coast; Je47 "Endeavour" sails Inside Passage Seatt-Juneau; Jl33 canoeg same, Tacoma-Juneau; Jl52c coast & agric; Eskimos; Jl30 "Yukon trail" today; D75 raftg down Yukon r; O49c Fairbanks; Ap69 N Alas; N76(fdts, pn) probms of oil pipeline; Je63 (pns); S21c, F18 & Ja17 Vall of 10,000 Smokes in Katmai Natl Monum (fumaroles, or miniature volcanoes); F67(drgs) glaciers of A; Mr72-6(pn,drgs) 6 arts on geog of tundra & wildlife; Ag53c2(16pn) Mt McKinley & wildlife; Jl38avs mts & glacs of Mt Mck regn; Mr35 Washburn conq of Mt Crillon; F48c Mt St Elias; Jl77(f) Noatak riv; Ag43c (16pn) Navy in Aleutians; O74 Atka isl & its Aleuts; Ja54c King isl Esk; Ap51 Little Diomede Esk; O48 & D42 Aleut & volc; S31 Aniakchak volc; Je4-3(pns) details of quake of Mr64 nr Anchorage; F43 Alcan h'way; O40 & Jl38 air phot;-S23 Middleton isl, S A; Ja73 family roughg it in wilderness near Anchorage; My73 acr Alas & Can on bikes; S72 Nikolaevsk, village of Russ refugees; Mr73, S42 & My39 archaeol (Most articles include Eskimos, q v)

Arizona. Mr63, S53c; Ja29c2; Jl78-2(doub fdt, fdt rel map contour map supp); My55 (contour map) & My24 (surveying) Gr Canyon; My69 Powell's hist exploration of Gr Canyon retraced; Ap64 Glen Canyon dam project; Ap62 jet bt up Colo r; S73 Organ Pipe Cactus Nat Pk, plant life; F74 Mazatzal Wilderness Area; D45c & Ap37-2 cactus; Ap50c sheep herding; F58 wildlife; Ag47c Navajo land, pt A

Arkansas. Mr78, S46c2, N70 & My43c2 Ozarks; Jl75 Ozark hill country fam of wood carvers; Mr77(f) Buffalo Natnl Riv

California. Je54c5(93c)(2c on Sierras & Pasadena Tourn of Roses); My66-2 the South (L A., San Diego, indus &c) & the North(San Francisco, redwoods & rivs); Je29c2 scenery & wildflowers

SAN FRANCISCO & NORTH. Mr36c3(2c) indus, scenery, flora, N Cal; N59 N Cal's coastal Rte 1; N69(pn) SF Bay region; Ag56, Mr43 & Ap32 SF; Je71 combattg SF Bay pollutn; N75 SF's Chinatown; Ja73(map, air phots, model) San Andreas Fault; My51c(f) Calaveras sequoia grove; My79 Napa vall & vineyds

S76(f) Stockton area, inland delta, E of SF; D48c Vall of Moon; F39c2 Golden Gate & redwoods; Jl79(f) G Gate Natnl Recr Area; Ag34 coastal redwoods; Jl64-2 world's tallest trees, wildlife & lumberg; S77 redwoods, N coast; My59b train thru redwoods, FtBragg-Willits; S73 Lost Sierra, NE cor of C, isolated snow-bd mt loggers, gold miners, cattlemen; Je74-2 & Ap51c Yosemite & Mr37c(pn) Yos geol

SOUTH OF SAN FRANCISCO. My49c esp agric; N34 c2 esp indus, S Cal; N72 Monterey penin; N46 Cent Vall agr & irrig; Ag58 Santa Barbara isl & wildlife

Ja79(fdt), O62(fdt, pic map) Los Angeles; Ag63(fdt pic map) Disneyland; Ja73 pt, LA quake of '71

Jl66 pt, Yosemite & Sequoia Nat Pks; My51c(f) Sequoia Nat Pk; Ja70(f) Death Vall; Ja76(f) Owens Vall & water war with LA; N57 desert reclaimed for livg & agr

Jl69(f,pn) San Diego; Ja42c2(2c) San Diego & Catalina; D52c La Jolla; S40(f) S Cal's tuna fleet

Colorado. Ag69; Ag54c; Jl46c & Ag51c high country; Mr79 Denver; N59 Mesa Verde & Jl32c2 nat pks; F64 (7pn) Wetherill Mesa, Mesa Verde Nat Pk; Mr54c canyons; F59 pt, skiing; D73 skiing &c, Aspen

Connecticut. S38c2; Ag68(pict map) Old Mystic Seaport; Ag62 Groton sub base, Coast Grd Acad, New Lond, Old Mystic Seaport; Ja75 Portuguese in Bristol; S57c Long Isl Sound; S72 Ct r, pt C

Delaware. S35c2; Jl38c3(2c) pt Del

District of Columbia. D64(pic maps) growth of city; Ap67(fdt pn, pic map) future plans; Ag52c; Je47c; N31c2(46 in col); Je23c5(entire); S43c2; Mr30c2; F35 (duot) winter; Ap40 night; Ja64 (fdt pn) Capitol in detail, archit & hist; Ag52c its art works; Je60 Smithsonian & oth museums; N78(fdt,diagrs,av) East Bldg of Nat Gall opens on Mall; Mr42c2 institutions; Mr70(feat) Ford's Theat; Ja57 Penna Ave; Mr64 JFK funeral; Je37 c2, Jl38c2 & Ap35c2 spring & countryside; N58 Arlington Cemet; N66(pn, plans, hist) & Ja61 White House; My50 Lib of Cong; Ap53c Georgetown; Mr15c(pns) Wash growth by W H. Taft

Florida. D63; Ja30c2; Ja58 down E coast (half F)

F66(7pn) Span settlemt of St Augustine; N52c Marineland; N73 Fla heartland, center pt: Disney World, Orlando, Daytona

N50c(2c) Miami; Vizcaya palazzo; Jl73 Cuban exiles, Miami; My65(f) shrimp nursery, U of Miami

Ja50c & Ja53c Key West naval base & gardens; Ja62 Key Largo, America's first undersea park; Ja71 lower Keys

F48c & Ja40 Everglades; Ja72(pic map, diagr) imperiled Everglades, water pollutn; Ja67(f) Everglades 'gators; D56(f) Seminole Inds, Ev'glades; Ag76 Big Cypress Natnl Preserve; Ja58-2 Corkscrew Swamp wildlife & limpkin; My77(f) mangrove swamps

Ja55 cruisg W Fla waterways in Miami; Ja44c2 Gulf

S7

coast, pt F

Georgia. Ag78; Mr54c; S26; F69 Atlanta(feat); F74 & My34 Okefenokee wilderness; Mr71(feat) sea islands, Jekyll &c; F34 isles of Guale; N77 Cumberland isl

Hawaii. Jl60; N49c; O38c2; F24c(entire); O42 home front after Pearl Harb; My54c Honolulu; N79(f) Oahu; Ap71 Maui; Mr75 Hawaii, the Big Isl; Jl66 Haleakala (crater) nat pk; Mr60 & Je59 volcanoes; N77 Kauai; O59 coral reef sea life; My35-2 duot, surfboards &c; Ja67 flowers say "aloha"; Ap & O76 Hokule'a, replica of anc "voyaging canoe" blt & saild to Tahiti & back; My78 wildlife, chfly birds

Idaho. Mr73; Je44c; Jl36 & Jl51 rivers & logging; F70 & Jl36(f) running its wild rivers; Salmon &c; O60 Craters of Moon Nat Monum

Illinois. Je67; D53c; My31c3(2c); Ap & Je48, pt; F52c Lincoln land; F48 Shawneetown rebuilt; Ap78(f,fdt) & Ja19 Chicago; N63 Grant Pk; Chic fm air

Indiana. S36c2; Mr76(f) backwoods folk of S I; S78 Columbus, In; F52c Lincoln land

Iowa. Ag39c2; S74(f) 320-acre fam farm; D75 Amana colonies

Kansas. Ag37c2; Ap52c; Jl76(f) K City; Ap52c(f) Hays

Kentucky. Jl42c2; Je34c; My74 bluegrass country near Lexington; horses & tobacco; N71 & D43(pt Ky farm life) Cumberland Gap; F52c Lincoln land

Louisiana. Ap58; Ap30c2; D47c; F53c New Orl; F71 N O & Miss r; S79(f) Atchafalaya Basin Floodway; conserv probm; Mr66 Cajunland (Acadiana) old French-speaking coast; N60 Lower Miss; O44 shrimp

Maine. Je77; My35c2; S45c2; Je68 coastal towns & activities; S52c coast, boating, fishing; F74 Allagash Wilderness Waterway; O48c potatoes; My51c mts, pt; Ap46 & F59b lobsters

Maryland. F72(pic map); Ap41c3(2c); F27; F75(f) Baltimore; S64 Chesa Bay new bridge-tunnel; D67 (feat) oystermen, Ches Bay; S39 Chesa regn; Ap54c colon archit; O76; Jl45c2 & Ag48c (canoeing) Potomac r; Ap68 (Zahl nature phot) changing seasons in Pleasant Vall, W Md; Mr60 C & O canal; My56 Sherwood Gardens, Balt; Ag53c Beltsville agric exper sta; Jl38c pt

Massachusetts. D66; Mr50c lit landmarks; S31c; Mr20 industry; Ap23 Coolidge on Mass

S74 & Jl36c2 Boston; Ag62(old map & air phot) Boston & Old Post Rd; Jl74(old prnts, pns) Mass in the Rev, Boston Massacre &c; N63 Boston Common, 1848; F20 Thoreau country

Jl53c Gloucester; Ap79(fdt) & S45c N Shore, Cape Ann; Ja75 Portuguese in Mass; Ja51c Merrimack r & indus

Ag62(pic map); Jl75 & Je46c Cape Cod; Ag47c Pilgrim's land; Je61 Martha's Vineyard; Je70 & Ap44c2 Nantucket

F55 Worcester; Je69(4pns & hist map) Deerfield hist, restoratns, school; S72 Ct riv, pt Mass; Ag70(f) Berkshire Hills; My51c pt, mts

Michigan. Je79; Mr52c; D44c2; Mr28; D31 Isle Royal & F63 its moose & wolves; Jl58c & Mr52pt, Greenfield Village

Minnesota. F76; S49c; Mr35c2; N58 Upper Miss r; Ag47 NW Angle; Jl77(f) St Croix r; Jl76 climate-controlld Crystal Court complex, Minneap

Mississippi. S37c2; F49c; N68 along Natchez Trace, Tenn-Miss (hist, natl pk); N60 pt; Jl63 (pic map) Vicksburg battle centennial

Missouri. Mr46c2; Ap23; N65 St Louis, new Gateway Arch & views of city; Jl76(f) Kan City; N70 & My43c2 Ozarks; Ap48 Mo r; Jl56 Hannibal & Mark Twain

Montana. My76; Je50c; My56(pic map) & Jl79 Glacier Internat Pk; O73 cattle ranch life around the yr; Mr60 earthquake; J170 Hutterites; Jl77(f) Flathead riv

Nebraska. Mr74; My45c2; O78 Sand Hills regn

Nevada. Je74, Ja46c; Je66 Basque sheepherders; My68(feat) Carlin gold mine (drgs of processes) 2d richest in N Am, open-pit

New Hampshire. S31c2; Ag61(W.O. Douglas; fdt pic map), My51c, N36c2 pt(skiing) & Jl37 all mostly White Mts; F20 & F59 skiing

New Jersey. Ja60; My33c3(2c); Ja74(f) SE NJ(Pine Barrens)

New Mexico. My38c2; D49c; S70(fdt); O53c Carlsbad Caverns; Jl57 & Ag35 Alamogordo gypsum desert; Jl77(f) Rio Grande; S78 Sangre de Cristo mts; Ag57 El Morro inscription rock

New York. N56 Thruway rte; N33c2 Empire State

Jl64 NYC incl World's Fair; Ap65(F; fdt pic map) World's Fair; N30c3 & Jl18 NYC; Mr62 & D54c NY harbor & Je59 Staten Isl ferry; D60 Cent Pk & museums; F63 Am Mus Nat Hist; S61 UN; F77(f) Harlem life; Ag75(f) Hasidic Jews of Br'lyn; Ap75(old map) NYC in Am Rev; Loyalists

S57 L.I. Sound; Mr51c & Ap39c2 L.I. incl World's Fair; N55 Kings Point Mcht Mar Acad; Jl79 Gateway Natnl Recre Area, Jamaica Bay

Mr62(f) & Jl48c Hudson riv; Ja78(prns,maps) same, environ study; Ap39 H. Hudson; My52c W Point

Mr59(f) & Ap59 St Lawr Seaway; Ag67 Lake Champlain country & hist; My75 & Je38c2 Adirondacks; Jl47c Mohawk Vall & hist; N41c2 Orange Co farm life & onion flds; My77 & My41c Finger Lakes; Ap63(pic map) Niagara Falls & indus

North Carolina. F62; Ag41c2; My26; O55; D70(pic map) Old Salem vill of 18th c restored; Je58b hill folk; S69(feat), S47c & D33 Outer Banks & coastal isl(hist); O68(feat) Gt Smokies Nat Pk; O52c(f), Ag36 pt, Gt Smokies

North Dakota. S51c

Ohio. Ap55; My32c2; Jl78 Bass isl, Lake Erie

Oklahoma. Ag71; Mr41c2; My57 Wichita Mts wildlife refuge

Oregon. Ja69(fdt); D46c2, N52c, F34c2; D79 Ore Pacif coast; Je41c Columbia power; Je72 Ore's Willamette r "restored"; conserv measures; Jl62-2(3pn) Mt Mazama eruption & origin of Crater Lake; Cr Lake summer; Mr37c(pn, Cr Lake Geology); Ap79(f) Warm Spr Ind reservatn; N49 snow survey

Pennsylvania. Je78; Jl35c2; Jl48c(16pn); My19 indus

titan; JI50c Susquehanna; JI52c Del r; JI41c2, O52c & JI38c Penn Dutch; Ag65 Amish folk; Ag60(hist) & D32c Phila; Mr65 & JI49 Pittsb; F54c Valley Forge, hist; JI63 (fdt, pic map) Gettysburg battle centennial; JI31c Gettysburg; JI51c Longwood Gardens conservatory

Rhode Island. S68; Ag48c; S31c pt

South Carolina. Mr53c, Mr39c2 Charleston; Mr71 sea islands

South Dakota. My47c3 incl paleozoology; O56 Black Hills; Ja49 Mt Rushmore, carvg head

Tennessee. My39c2; Ap48c dam-made lakes; N71 & D43 Cumberland Gap; O68 & JI79 Gt Smokies Nat Pk; JI62 hill farmers of Cades Cove; Gt Smokies & Aug36 Gt Smokies; JI79 Shiloh Nat Milit Pk(brf); My78(f) Grand Ole Opry Hse, Nashville, & performers; N60 pt

Texas. F61; Je28; JI77; Ja39c2 & O39c2 Rio Grande region; F78 Gulf Intracoastal Waterway, pt T; Ja44c2 Gulf coast, pt T; S67 Houston; Ja52c King Ranch; Ap76 & D47c San Antonio; F45 prods, manufactures; O74 Big Thicket, forested area of E coast; Ja68 Big Bend Nat Pk; JI79 Guadalupe Mts Nat Pk; My71 US-Mex border, mostly Tex; Mr75 6 mos alone in cave, Del Rio

Utah. My36c2; Ap75 Salt Lake Cy & Mormon roots; Ag47c2(2c), Ja54c Zion; My62 cities of stone; O58 Bryce Canyon; JI67 Lake Powell & Glen Canyon Dam; JI71 Canyonlands Nat Pk; Je52c Four Corners; S55 & S49 & Ag72(pn, relief map) Escalante land; Mr70 & My48c Havasupai Inds; O45c & D65 pt, Monument Vall; N62 Fisher sandstone towers first scaled; Ap57 Rainbow Bridge; D58 Gt Salt Lake & Mr74 & Ag67 life forms found there

Vermont. JI74 tradit country life; Mr27c2; Ap54c(f) maple sugaring; My51c mts; Ag67 Lake Champlain; F59 pt, skiing

Virginia. Ap29c4(2c) genl & Monticello, esp hist; N74(pic map) chfly rural; Ap70(fdt) Shenandoah Vall, V-WV; N71 & D43 Cumberland Cap, pt V farm life; JI38c pt V; O76 & Ag48c(canoe trip) Potomac r; Ap & S64 Chesapeake Bay country & new bridge-tunnel; N73 Tangier isl; Ja53c Alexandria; My47c Norfolk azalea gardens; Je72 rural nature phots; JI32 Dismal Swamp; Je51(f) Dog Mart day, Fredericksburg

HISTORICAL. My57 Smith of Jamestown; Je79(8pns, diagrs,map) Martin's Hundred, earliest town plan excav in Brit N Am, of 1619; D68, O54c & Ap37c colon Wmsburg restored; Ap48c founders of V; N53c & My28c Mt Vernon; Ja76 Jefferson's life & wks; S66 J's Monticello & Charlottesville; JI74(pn) V in Am Rev (brf pt); My42c2 colon homes & bldgs of tidewater V, excav near Jamestown; Ap56 & Je53c old homes of V; Ap65(pns) Appomattox, Lee & Grant

Washington. Ap60c2, one on Seattle; Ja77 Puget Sound; S62(pn) Seattle World's Fair; F33c3(2c); D74 Grand Coulee & map of all dams on Columbia r; N52c Columbia r; Je41c Columb power; JI77(f) Skagit r; F74 Olympic Nat Pk wilderness area; N78 Yakima vall; Ap74 winter on Lake Chelan in N Cascades Nat Pk; My68 & Mr61 N Cascades primit area; JI46c forest lookout; JI53 glaciers

West Virginia. Je76; Ag40c2; Mr57 Harper's Ferry (hist); Ap70 Shenandoah mts, Harper's Ferry; O76 Potomac r; JI72 hillfolk of Apppalachia; folk music, handcrafts

Wisconsin. F57; JI37c2; Je47c "Swissconsin"; Mr69 Door penin(feat); JI77(f) St Croix r; Ag74 Menominee Inds; Ap74 children campg in Eagle Riv area

Wyoming. Ap66(fdt); Ag45c2; Je48c Tetons; D65 Grand Teton Lake &c; JI79(brf) Gr Teton Nat Pk; D76(f) & Ja56 Jackson Hole & wildlife; D56 & Je40c2 Yellowstone; D78 Yellowstone in wint; ranger family's life snowbound; F74 Wind Riv Range wilderness area

U.S. ARMED FORCES. *(For wartime see HISTORY, MOD.)*

Collective. F66 Navy & Marine Corps advise Viet River Assault Groups, 1964; Mr45c3(2c) 8th Air Force in Eng, Army & WAC nurses & battleship Mo; Mr53c in Korea; Ag44c2 Navy & AF in New Hebrides; N45c (17pn) in Marianas; Ag43c (16pn) Aleutians; Ap47c Bikini blast; Ag55 aviation medicine; Ap59 copter uses; N62 Army & Marines & copters in Viet; Mr18 health & morale(by W.H. Taft); Ap17 trng recruits

Air Force. S65-2(1 hist by Gen LeMay) survey of present AF & types of aircr(26 on fdt); F46c air power; My60(24pn) action scenes around world; Mr57 milit air transp serv; Ag57 50 yrs milit flight; Ag61(pn) 50 yrs naval aviation; Je59 & Ag69 AF acad; JI58 DEW line; Ap66 Minuteman missile, Warren AFB, Wyo; My53c sch for survival, paratroopers; Ja48c humor in warfare; Ag44c & O44c (19pn) Pacif war; Ag45c take-off for Jap; Mr45c 8th AF in Eng; JI43 Air Transp command; S43 AF Tech trng command; Ag44 invasion of Burma; Ja43 bombers attack fm Austl; My49 Berlin airlift; O59 (3pn) Canaveral rocket & missile progress; D60 Proj Excelsior parachute fall 18½ mi; S68 rescue by copter, Viet

Ja & Je18 WWI aviation & leading aces; Mr27 (by Gen. W. Mitchell) "America in the air," experim bombing of ships (see also SPACE FLIGHT)

Army. My52c & Je36c W Point; Ap68, S64 & Ja65 Special Forces in Viet; JI44 GI basic trng; N42c2 (16pn) maneuvers & QM; Ag43 testing equipment for survival; N44 infantry; N43 Med Corps; Mr45 wounded back to US; Ap47 Signal Corps carrier pigeon

N-D17-3 US camps & trng; furlough to Versailles; Je18 cooties

Army: WAC. Mr45 Army nurses; O43(f) women in unif

Coast Guard. JI74; My43c2 Gr'land patrol; JI55 trng cruise in sq-riggedbark; D55 weather patrol; Je68 (feat) ice patrol; Ag62 pt, New London Academy

Marines. F67 in Viet; N50 in Korea; N45c(17pn) jungle war; Ja44 & JI44 landing craft

Nasa. *See SPACE FLIGHT.*

Navy. F65(doub fdt & pic map) 4-ocean navy; survey of nuclear capabilities fm aircr carriers to subs; S59 Pacif fleet; Je46c; S41c(8pn) warships; O53c cruising Far East; Ap54c same, Middle E; Ag61(pn) 50 yrs naval aviation(carriers, blimps &c); Je64-2 nuclear sub Thresher; Mr63 largest & first nuclear aircr carrier Enterprise; Ja & JI59 nucl sub under Pole & N60 around world; N52c submarines; Ja48 same around

Cape Horn; Jl43 blimp hunting subs; O59 Antarc wk; My62 Camp Century, Grnland; nuclear power pl; Jl42 aircr carriers; N43c2 carriers & pocket carrier; Mr45c "Mo"; Ag45 "Princeton"; Ag44c2 & O44c(19pn) Pac war; N45c(17pn) Marianas; Ap44c(17pn) jungle war; D68 assault flotillas, Viet

Je36c & S64 Annapolis; Je48c midshipmen's cruise to Brit; Ag62 sub base, Groton, Ct; S68 Newport Naval Base & Naval War College, RI; Ap18 trng; Mr61 Guantanamo base, Cuba; Ja50c Key West base; Jl47 Navy Hydrographic Off; O47c exploring Antarc; Ag60 bathyscaphe 7 mi dive; N61 (2pn) Proj Stratolab High 5 (balloon up 21½ mi)

Je21 across Equator with N, "Father Neptune" Navy rites, Guantanamo base

Navy: Waves. Je52 parachuting

Women's Auxiliary Forces (Collective) O43c2 (376 pn decorations, incl women's)

U.S. GOVERNMENT SERVICES. *(See also INSTITUTIONS and SPACE FLIGHT)* Je61 FBI; Jl54c(f) Post Off; prntg stamps, sortg & deliv mail &c; Jl54c Bur of Engr & Prntg; N55 Kings Pt Mcht Marine Acad; Ja26 air mail; My56 Civil air patrol; D50 mail to Gt Lakes freighters; N71 mailman on horse; Ap55 weather stations in Arctic; N59 Census Bur (illus chart of US pop growth); F57 US Coast & Geodetic Surv; N44 same mappg world at war; Mr56(f) mappg survey of S Am; all-Am proj w Army Corps of Engin; My24 & F18 US Geol Surv; Jl66 Park Service; Jl68 Forest Serv fightg noted fires; Mr61 Forest Serv, smoke jumpers; D51c & F15 Nat'l Bur of Standards; N75, My50 & D64 Lib of Cong; Je60 & S48c Smithsonian natl mus; My71 & N55 Immig Serv; S64 Peace Corps in var lands

U.S. HISTORY. *(See also EXPLORERS; HISTORY, MODERN and sep states prominent in US hist)* N64, Ja, My & O65 & Ja66 series of arts on all US pres, events of their admin & fam lives; N64 Washington-J.Q. Adams; 1789-1829; Ja65 Jackson-Buchanan, 1829-61; My65 Lincoln-McKinley, 1861-1901; O65 T. Roosevelt-Hoover, 1901-33; Ja66(5pn) FDR-LBJ, 1933-65; F51c (33pn) US hist in art; Jl59(incl pn) hist of Am flag; S48c (24pn) Am masters in Nat Gallery, many hist; S62 US hist as seen in "primitive" art; Ja49 hist shrines of US; N66 & Ja61 White Hse hist; Ja64 Capitol hist

Je53c3(3c) 8 maps of discov, founders of New Eng, Lewis & CLark rte; F66(7pn) Sp explorers, Fla; Ap39 H. Hudson's voyages & life; My57 Smith of Jamestown; N57 & My57b Mayflower II; Ag47c & D66 pt, "Plimoth plantation"; Je69(4pn, pic map) colon bldgs, Ind massacre, Deerfield; D68 & Ap37c2 colon Wmsburg, 17th, 18th c bldgs, crafts, etc. (See also US VA.); S63 relics of Canadian voyageurs in N Minn; Ag67 Ft Ticonderoga; Jl70 siege of Quebec (old prints); N69(pn) discov of San Fran Bay by Span de Portola, 1769 & F75 Drake's doubtful landg in Cal

Ag62 Old Boston Post Rd; Jl75(many old pr, map) B. Franklin; Jl74(3pn, old prints) 3 leadg rebels: S. Adams, T. Paine, P. Henry; Ag60 Phila & colon bldgs; F54c Valley Forge; Jl76 (old pr, maps pns) Washington biog; Ja32 & Je53(map) Washington's travels; N53c Mt Vernon, 18th cent; F76(old pr, port, ms) Jefferson's life & bldgs; Je17 France in Am Rev; Ap75(fdt, old Eng map) Loyalists in Rev flee US; O75(11pn) famous women patriots of Rev; S64 Ft McHenry fm air

Je53c3(3c) Lewis & Clark rte, 8 maps of discovery; N65 westward expansion, early transportation, Ind battles Lewis & Clark; N68 Natchez Trace, hwy ord by Jefferson 1806; F52c New Salem, Ill, "log cabin Wmsburg," frontier cabins, implements; Mr60 C & O canal to Wash, D.C.; Jl53 Perry opens Japan; Jl62 frontier living in Cades Cove, Gt Smokies

F52c Lincoln land; F60 US as seen by Lincoln (pic map); Ap61c2(contemp engrav) Civil War & Brit correspondent; Jl63(pns & old prints, fdt pic maps) Gettysburg & Vicksburg battle centennials; Jl31c(f) Gettysb battlefld; Mr68 battle of Mobile Bay; Ja75 one-yr career & sinking of Monitor, 1862; S64 & F51c(pn) Monitor & Merrimack battle; Mr71 Hilton Head naval battle; Jl71 Confed ships change cargo w Brit, Bermuda; Mr57 Harper's Ferry & F51(pn) John Brown; Ap65(3pn, old prints &c) Appomattox, Lee & Grant; N76(early phots) (Redford) bad men of the wild west; Mr77(f) Nez Perce Inds & War of 1877. (See also INDIANS, NO. AM.)

Jl58 & Mr52c pt, Greenfield Village, Ford Museum; Ja34c2 US war mems in Eur; Ja49 patriotic shrines; N58 tomb of unknown soldier, WWII; Je57 WWII mems abroad

U.S. NATIONAL PARKS. *(See also CONSERVATION)* Jl79(many fdts,avs,guide/maps &c) entire iss on natnl paks, esp Alas; sect guides to all facilities; bibliogs of NG arts; Ap64, 6 in US & 3 in Can Rockies; My58; Jl34 (duot) W natnl pks; D65 thru Rockies nat pks w Lynda Johnson; Ja49 many shrines, nat monumts; Mr79-3(8p sect of maps & tables;pn) natnl wildlife refuges; isl, prairies, marsh & shore; S56 natnl forest; Ap73 John Muir, pioneer of nat pks; F74 America's wilderness, 5 areas: Mazatzal (Ariz), Okefenokee(Ga), Allagash(Me), Olympic (Wash), Wind Riv (Wyo); Jl77 US Natnl Wild & Scenic Rivs Sys & arts on 6 rivs

D79(fdts, rel map) Arct Nat Wildlife Ref, NE quar of Alas; My72 4 arts, Yellowstone; D78 same in wint; Jl66-2(fdt of Yosemite) Sequoia, Yellowstone, Death Vall, Yosemite &c; D56 & Je40c2 Yellowstone; Jl76 Yellowstone, Old Faithful fm air; D76 & Je48 Grand Teton, Wyo; Ap66 Gr Teton & Devil's Tower Nat Monum; Ja56c (feat) Jackson Hole & Grand Tetons; Je74, Ap51c & Mr37(6pn) Yosemite & geol

S21c, F18 & Ja17 Katmai Nat Monum, Alas, & Vall of 10,000 Smokes; Je75 Alas nat pks: one of more than 8 mill acres proposd in Brooks Range; Kobuk Vall Nat Monum, Yukon-Charley nat rivs, Caldera of Aniakchak, Mt Katmai volc area &c

My78 Hawaiian Isl natnl wildlife refuge, NW isl

My68 N Cascades (proposed nat pk) Wash; Ap74 N Casc Nat Pk in winter; Jl62c2 (3pn) & Je71 Crater Lake; Jl55 Olympic nat pk; My66 & Je71 Lassen Volc nat pk, Calif; My56 Waterton-Glacier Internat Peace Pk, Mont; Je50c Glac Nat Pk & Marshall wilderness area, Mt; O56 & Je51 Mt Rushmore natl memorial (for Stone Mt see US GA.); O56 Black Hills nat forest

Jl78(doub fdt, rel map, map supp, scenery & conserv study); My69(fdt,pns) Gr Canyon, Powell's explor retraced, geology study; My55 Grand Canyon; O58 Bryce Can; Ja54c Zion; Jl71 Canyonlands N P, Utah; F64 (7pn), S48c, N59 & Ja59b(Wetherill Mesa) Mesa Verde; Mr63 Petrified Forest, Ariz; S53 Cochise Head Wonder-

land of Rocks, Chiricahua nat monum, Ariz, Mr22 & Jl23 Pueblo Bonito expeds; S73 Organ Pipe Cactus Nat Monum, Cal-Mex border; O53c(f) Carlsbad caverns, NM; Ja68 Big Bend Tex; Ap57 Rainbow Bridge, Ut; Je52c(f) Natrl Bridges, Cathed Vall &c, Ut; O60 Craters of Moon nat monum, Id

S69 & O55 Cape Hatteras & Cape Lookout natl seashores; O68(feat) & Ag36 Gt Smokies, Tenn-N C; Je34 c2 E natnl pks: Shenandoah, Gt Smok, Cumberland, Mammoth Cave &c; Ap70 Shenandoah N P; Geo Wash Nat Forest, Va; Mr77(f) Buffalo Natnl R, Ark; N68 Natchez Trace pkwy, TennMiss; My57 Wichita Hills wildlife ref; O67(pn); F48c(f) & Ja40(f) Everglades nat pk, la, & wildlife; Ag76(f) Big Cypress Natnl Preserve, Fla

U.S.S.R. *See RUSSIA*

UPPER VOLTA. Ag66(brf)

URUGUAY. N48c

VENEZUELA. Ag76; Mr63; Ap40c2 Caracas; Ja39-2 jungle; N49c world's highest waterfall & Indians; N31 Orinoco r

VIETNAM. *See INDOCHINA*

VIKINGS. Ap70(4pn, fdt); D62(pns); N64 V in N Am, settlement found in Newfoundland

VISIGOTHS. D62(pn)

VOYAGES. *(See also ANTARCTIC; ARCTIC; EXPLORERS; SHIPS; SPORTS)* N57 & My57b Villiers' Mayflower II; Ag63 & Ag61 V's ketch on Devon & Cornwall coast; Ap61 V sails Scotch coast & waterways; D59, Mr51c, Ja49c & Ja42c2 brigantine "Yankee" in S Seas, Orient, Atl &c; F37 clipper "Conrad" Singapore-Sydney (Villiers); F28 34-ft "Islander" around w; Jl39 yacht "Igdrasil" around w; O68(fdt,2pn) & Ap69 teenager sails around w in 24 ft fibergl sloop (Hawaii-Durban, S Afr; Durban-Barbados); O70 sails home Barbados-Long Beach; Ag37 schooner "Pilgrim" in S Pac; F31 (Villiers) handlg windjammer arnd Horn; Ja33 grain ship race, Austl-Eng; D31 40-ft sloop "Teddy" Norway-Austl; Ja41 Heyerdahls(of Kon Tiki) on Pac isl; Ja71 (Heyerdahl) Ra II blt of papyrus reeds crosses Atl Morocco-Barbados; D78 Heyerdahl blds reed sh "Tigris" of anc Sumerian type in Iraq & sails Pers Gulf & Ind Ocn; Ap & O76 Hokule'a, replica of anc "voyaging canoe" blt in Hawaii & saild to Tahiti & back; S67 kayak trip on Jap Inland Sea; Je58 38-ft yawl "Finisterre" Newport-Gibraltar; D65 same cruiser in Windward Isl, W Ind & O66 same in Leeward Isl; Mr38c2 52-ft ketch "Alice" in W Ind; D47c(f) "Carib" cruises WI(Venez-Annapolis); Jl70 46-ft yawl up Hudson, dn St Lawr to Newfoundland & Cape Breton isl; Je47 "Endeavour" sails Inside Passage, Alas; Jl27 windjammer on scientif cruise in St Atl; N50c Baltic cruise on "Caribee;" Ag54c 36-ft cutter sailbt cruises S Norway; D55 on Danish full-riggd trng sh, Isle of Fyn, S Den; Ag64 "Yankee" cruises Eur inland waterways, E French rs; My65 the Nile & D69 (hist map; 2pn) Turkish coast; My48 last of the square riggers

Special. *(See also SHIPS MILIT; SPORTS WATER SPORTS)* My45 cases of survival at sea; D73(drgs) D. Lewis takes 32-ft steel sloop "Ice Bird" alone Sydney-Antarctica & Ag75(pn,drgs) ends in Cape Town; D77(f; pn; illum ms; pic map) voy in mediev 36' leath cov sailg bt Ire-Icel-Newf inspired by St Brendan's legendary 6th c voy; D76 transatl parade of sq-riggers meet in Newport for Bicent; My55 kayak trip down Nile; N48 Arab dhows; Jl55 Coast Grd trng cruise in bark; F49 lone canoe trip Ecuador-Atl via Amazon; D75 4 young men raft down Yukon r; N57 Prince Philip's world cruise

Historical. *See EXPLORERS.*

WASHINGTON, GEORGE. Jl76(old pr, maps, pns) biog; N53c Mt Vernon; Ja32 his travels; F51c port

WEAPONS. *(See also HISTORY, MODERN; U.S. HISTORY; U.S. ARMED FORCES; and articles on primitive tribes by country.)*

Primitive. S60 spears (& forging) Uganda; Mr73 bows & arrs of Zaire tribesmen; F74 blow-pipes & pois darts, Borneo; My64 bamboo bow & arrows, Braz Inds; F75 stone age axes of Braz Ind; S68 bows & arrows of Tchikao, S Am Inds; N49 fish paralyzed by S Am Ind barbasco poison; Je63 poison for bushmen's arrows; F60b Afr pygmies' poisoned arrows; F64 bows & arrows of early Pueblo Inds; O56b arrow & spear tips of archaic Am Inds 6000 BC-1500 AD; Ja & S79 Ice Age spears & sp-throwers, stone knives, N Am; O56b arrowhds of N Am Cave Man to 6M BC; D79 mid-19th c arrowhd of Alas Esk; Je57b blowguns w curare darts, Br Guiana Inds; F34 preparg pois arrs & spears, Ecua; S71 stone ax, bows & arrows, Braz Inds; F64 blowgun of Peru Inds; Ap66 Ind arr'hd embedded in bflo skull; S43 blowguns, Indon

Historical. My77(pns) prehist Celtic weapons; war chariots; O41pn anc Egyp charioteer, bowman; Ja68 weapons of Alexander's time; catapult, stone balls, elephants, spears, shields, bows; N46pn & O38 Romans storm fortif walls; D62 weapons of anc Romans, Visigoths, Huns, armored mediev knights; Mr54 ws of Beowulf's era (Danish peat bog); Ag66 swords & axhds of Wm the Conqueror's era; N64 Viking shield & battle axes, iron swords, bows; My55 mediev-type crossbows, Bulg; Ap41 Swiss crossbow; F55 crossbow of Naga tribe, Ind; O48c antiq ws of Ind; Jl45 kukri; Gurkha short sword, Ind; O48c scimitar, lance, dagger, b & arr of Rajputana

F66 (pns) 16th c cannon & Span armor, Fla; D77 musket, cannon of 1641; map supp shows firearms, swords, cannon & shots of 1550-1750; drg of loaded & armed Span galleon; Je79 bullets & molds of 1625, Va; musket & armor (pn); Je76 bronze Sp cannon of 1616, grapeshot, split-bar shot; Ja76 Louis 14 cannon, Haiti Citadel; Ag64 cannon, Belfast castle walls; Ja51c Fr brass cannon of 1743; N78 ornate Ger rifles, 17-18th c; D68 musket & 6 lb siege cannon, Wmsburg; Ja49 pointed stakes (fraises) on Yorktown battlements; cannon & balls fm Brit ship, Y'town; S68 mt man's flintlock (Brit, ca. 1800) Kyber Pass, Afghan; Ja77 guns & g'makers of NW Pakis

Modern. D44c armamts, planes, tanks, boats, guns &c,Mich; S72 handguns: Smith & Wesson; Garand w M-1 rifle; My48 loading 40 mm antiaircr shells; 16" guns on battleship NJ trng cruise; D44c 5" Navy guns in pl, Mich; Ag & S43 bombg, WWII; Ag45 bombs in

bins on carrier Princeton; F46 V-2 bomb; glide bomb, Azon(radio guided b); O50c Ger V-2 rockets in US; Ap47c Bikini expl of A-bomb; Je53(f) A-bomb test, Yucca Flat, Nev; D74(2p pic) A-bomb burst in Fr atoll near Tahiti; Jl54c Nike missle fired; F65 Navy in nuclear age, Subroc (pn) 8" guns of guided missl cruiser Boston, Talos antiaircr missl; F48(f) early guided missiles, oth experims; S65 arsenal of missls for Phantom II, USAF; NORAD, Colo Springs; Ap66 Minuteman missl in position, USAF

WEST INDIES. Ja48c; Je42c2; Ja41c3 Brit WI; N40 crescent of defense

Antigua. O66 pt

Bahamas. F58; F67(fdt pic map of Exuma Cays); F36; My 51c Andros isl, flamingos; S70 divg into blue holes of B

Barbados. Jl71; Mr52c

Bermuda. F54c; F39c2; Ja22(W H Taft)

Cuba. Ja77; Ja47c; S33; Mr61 Guantanamo base; Jl73 C exiles in Miami; Je76(pn) Span shippg w New World, Havana 1622

Dominica. D65; O66

Dominican Republic. O77; F44c2; Ja31c2

Grenada & Grenadines. S79; D65(pn); Ja48c

Guadeloupe. Mr38c2 incl Martinique; D65(pn); O66 pt

Haiti. Ja76; F61; O34c2; S44c2

Jamaica. D67; Mr54c; Ja27c2; F60 quake-drowned part of Port Royal (1692)

Leeward Islands. *(V I S to Martinique)* O66(5pn, fdt)

Martinique. Ja75; F59; Mr38c2 incl Guadeloupe; D65; Ja41

Netherlands West Indies. Ja70; F43c2 Curacao & Aruba; N40c2 Saba

Puerto Rico. D62; Ap51c; D39c2; D24c2; Jl60 Phosphorescent Bay (microorganisms)

St. Christopher. O66 pt, "St Kitts"

St. Lucia. D65

St. Vincent. S79; D65

Trinidad & Tobago. Ja53c incl Tobago; S37c2

Virgin. Ja68(pic map); F56; S40c3; O66 pt; My71(fdt) divg off St Croix; Jl16(Danish W Ind)

Windward Islands. *(St Lucia S to Grenada)* D65(fdt, 3pn); S79 S pt

WILDLIFE *(COLLECTIVE FAUNA; see also BIRDS and MAMMALS)* Mr79-3 US w refuges; N62 w facing extinction (by Duke of Edinburgh); Ap59 nature's eyes; Je53c(f) Lond zoo

No. America. Jl50c(16pn) Amer; Ag53c(16pn) Mt McKinley nat pk; Je63 fish & anim of Katmai region, Alas; D79(fdts,rel map) Arct Natnl W Refuge, NE Alas; Mr72 Alas tundra; Je56 Alas; My64 Arc isl wildlife: bear, fox, owl, flowers; Mr50b Calif small anim & birds; Ja56 Jackson Hole, Wyo; Ag21 Lake Superior; My57 Wichita Hills refuge; Ja49c(24pn) Everglades nat pk; My77 Fla mangrove swamp w; O76 naturalized foreign w, Fla; O67(pn); Ja58-2 Corkscrew Swamp, Fla, & limpkin; F58 Ariz; S32 Atl & Gulf shores; Je72 w of coastal wetlands; convervatn; Je65(pn) Del dune habitat: snake, rabbit, vole, toad, ant lion *(see INSECTS)*; Ag70(fdt, pn) Del pond w; Ap77 Vt brook life, mostly insects; Je64 cave fauna: fish, crustacea, salamanders, spiders, bats, mushrooms; D70 photog studies of plants & small w; Ag36 & F32 flash phot at home

F45c(19pn) w of Tabasco & Veracruz, Mex; S41c2 Mex desert isl, eleph seal, tropic-bird &c

Cent. & So. America. Ag15 Panama; Ap67(pn; R.T. Peterson); My59 Galapagos isl; Je57 Brit Guiana; N38c2 Amaz delta; N31 Orinoco r; N52 Mato Grosso, Brazil; Mr76-3 Arg birds, anim, whales

Africa & Elsewhere. Ag56(13pn) Cent Afr; S71 aquatic w, Kenya pools; S60c2 Afr; N62 Uganda anim & birds, many babies; F65(Leakey exped also); S76 (fdt, coll pn) India's conserv struggle; O44 Pacif area; F73, O44, D36 Australia,; N68 Gt Barrier Reef(pn of 72 species); My78 Hawaii, chfly birds; N71 Graham Land, Antarc Peninsula

WOMAN. Ag74 w in indus, N Kor; Ag44(f) w in war indus; Je78 Pa steel pl; O78 Neb ranch; Je76 w miners, WV; D71 w in var indus, China; Ja38c(f) w's work, Jap; Ag77 w workers in Russ; Ag79 same in Yem

O75(11pn) w heroes of Amer Rev; Ap74 w in armed serv, Syria; Jl74 w in Coast Guard; O43(f) w in unif, WW2; *(see also U.S. ARMED FORCES)*; N47 New Delhi Coll of Nursg class

S32 1st w to fly Atl solo(Earhart); Je32 husb-wife team flies world

O75 Arab w cast aside veil, Kuwait & Bahrain; not in Saudi Arabia; Ag77 purdah in India; life behind veil; F76 status of w in Sib; Jl77 premarital fertil rites of N Guinea tribe stud by w anthropologist

S74 w track stars at '72 Munich Olymp; O76 all-girl rodeo; Alta; S74 Radcliffe rowg crew, Cambr; My75 w guide in Andirondacks. *(See also SPORTS hdgs)*

WORLD. *(Intercontinental; see also separate continents, MIDDLE EAST, and VOYAGES)* S64 Peace Corps in many lands; D51c around w; D55 Atl shores, Iceland to Antarctica; S34 Lindberghs fly arnd N Atl; Je32 husb-wife team flies world (Days); Ap32 air phot, Eur, Near East, Afr; Ap42 Medit lands; Jl62 round-the-world school; D59 Grosvenor trip, mostly Asia; My60 (pn) Eisenhower official flight; N57 Prince Philip's world cruise; My30 W.H. Taft's travels

WORLD WAR I & II *See HISTORY, MODERN.*

WRITING. *(See also INDUS.PUBL; LIBRARIES)* Ja75 moon's phases recorded by CroMagnon man

F78 Phaistos Disk 3600 yr old (early Minoan?) symbols, earliest examp of prntg (fm seals), Crete; "Linear B" primit classic Grk; O41 Rosetta Stone; Mr77 anc Egyp hieroglyphics; D50 cuneiform inscr of Darius, Asia's Rosetta Stone, Bisitun; D60b &Ja51, Jl33 & O30 Babylonian cuneiform inscr; D78 15M+ yrs old cuneiform tablets excav, Ebla, Syr; F16 Sumerian & Babylon cuneiform w; payroll records show women's equality; D66(pn) clay tablets in anc Mesopotamia sch; Ag74 Phoenician script on Nora stone & gold plaque; Ap58b

Phoenic stone inscr of 1000 BC; Mr64 2000 yr old stone inscr of Sabaeans (Sheba), Yemen; Mr40 Hittite inscr deciphered; Je72 Grk inscr on stone, Asia Minor; edicts of Rom emps, price contols

D56 parchment scrolls of Torah, Jordan; D58(f, 5pn) production of Dead Sea scrolls; Mr65 same displayed in Hebrew U, Isr; D67 scroll bks revised, Jerus

Ap70 & N64 runic inscr on stone; S48 "Kensington stone" runes of 1362 found in Minn; O28 runic inscr; Ap76 & O55b Ogham inscr like runes (old Irish)

F22 Aztec & Mayan hieroglyphs explaind; D75 (doub fdt) myst of Mayan glyph w; Jl44 star map of 15th c Pawnee Inds, sign lang

O56 illum ms of 9th & 16th c, St Gallen Abbey, Switz; D62 Domesday Bk of Wm the Conqueror, pns of mediev monastic lib & scriptorium; Ja64 illum ms of early mediev scribes; Mr76 12th c ms plans for Canterbury Cath & 16th c addns; Mr61, My77 & S69 Bk of Kells, Ire; F58 mediev ms decoratn; Bk of Hrs, 1450; D60 145h c Fr illum ms; N64 14th c Icel vellum ms; N75 close of Columbus ms letter; Je76 ms bk on Magellan's exploratns; N75(2p) 16th c illum bk of hrs in Lib of Cong; Ap55 illum ms of music 1641, Canaries; F76 Jefferson's ms of Decl of Indep; My50 Brahms ms in Lib Cong

Arabic & Oriental. D27 Arabic calligrapher; N76 scriptorium of Buddh monks w thous of carvd prntg blocks (block-prntd bks), Bhutan; O66 Buddh stone inscr, Nepal; Mr69 Buddh temple's wooden prntg blocks handcarvd in 13th c, Korea; D79 famous Korean calligrapher at wk; Mr51 7th c Chin scroll; Je27 lrng to brush Chin characters; Mr70 Jap calligraphy of Zen abbot; Mr71 legends inscr on palm leaves 400 yrs ago, Burma

YEMEN ARAB REP. Ag79(hist maps 950BC-present); Mr64, F52c, N47c2, Ag17

YEMEN, PEOPLES DEMOC. REP. F57b, D35, O32(f) Hadhramaut, E Y; O67 pt

YUCATAN. *Peninsula containing parts of Mexico & Guatemala and all of Belize*

YUGOSLAVIA. My70; Je39c2; F51c; S30c2 genl & rustic; Ap44; Je41; F62 & Ja28c2 Dalmatia, Dubrovnik & E Adriatic; N77(f) Montenegro; Jl65 Danube, Belgrade Sq, pt Y; S65 Lake Bled, Alps; Ap15 Serbia

ZAIRE. *(Formerly Belgian Congo till 1960; later Repub. of the Congo; not to be confused with Congo People's Rep., formerly French Congo)* Mr73, Mr52c; S60 pt; N37; F60 pygmies; O19 Kwilu r tribes; Ja60 gorillas; Mr62 Mts of Moon (Ruwenzori range); O39 8 mos hsekepg on volc, Congo wilds

ZANZIBAR. *See TANZANIA.*

ZIMBABWE. *(RHODESIA).* My75; S44c, Je35; Je66 flag *(Northern Rhodesia called Zambia since 1964)*

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